

$V_{CES} = 1200V$
 $I_{C\ nom} = 75A / I_{CRM} = 150A$

一般応用

- 3レベル アプリケーション
- ソーラーアプリケーション

電気的特性

- 高速IGBT H3
- 低インダクタンسデザイン
- 低スイッチング損失
- 低 V_{CEsat} 飽和電圧

機械的特性

- 3 kV AC 1分 絶縁耐圧
- 低熱インピーダンスの Al_2O_3 DCB
- コンパクトデザイン
- PressFIT 接合 技術
- 固定用クランプによる強固なマウンティング

Typical Applications

- 3-level-applications
- Solar applications

Electrical Features

- High speed IGBT H3
- Low inductive design
- Low switching losses
- Low V_{CEsat}

Mechanical Features

- 3 kV AC 1min insulation
- Al_2O_3 substrate with low thermal resistance
- Compact design
- PressFIT contact technology
- Rugged mounting due to integrated mounting clamps

Module Label Code

Barcode Code 128



DMX - Code



Content of the Code

Content of the Code	Digit
Module Serial Number	1 - 5
Module Material Number	6 - 11
Production Order Number	12 - 19
Datecode (Production Year)	20 - 21
Datecode (Production Week)	22 - 23

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IGBT, T1-T4 / IGBT, T1-T4
最大定格 / Maximum Rated Values

コレクタ・エミッタ間電圧 Collector-emitter voltage	$T_{vj} = 25^{\circ}\text{C}$	V_{CES}	1200	V
コレクタ電流 Implemented collector current		I_{CN}	75	A
連続DCコレクタ電流 Continuous DC collector current	$T_C = 100^{\circ}\text{C}, T_{vj\max} = 175^{\circ}\text{C}$ $T_C = 25^{\circ}\text{C}, T_{vj\max} = 175^{\circ}\text{C}$	$I_{C\text{nom}}$ I_C	30 45	A A
繰り返しピークコレクタ電流 Repetitive peak collector current	$t_P = 1\text{ms}$	I_{CRM}	150	A
トータル損失 Total power dissipation	$T_C = 25^{\circ}\text{C}, T_{vj\max} = 175^{\circ}\text{C}$	P_{tot}	275	W
ゲート・エミッタ間ピーク電圧 Gate-emitter peak voltage		V_{GES}	+/-20	V

電気的特性 / Characteristic Values

			min.	typ.	max.		
コレクタ・エミッタ間飽和電圧 Collector-emitter saturation voltage	$I_C = 30\text{A}, V_{GE} = 15\text{V}$ $I_C = 30\text{A}, V_{GE} = 15\text{V}$ $I_C = 30\text{A}, V_{GE} = 15\text{V}$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	$V_{CE\text{sat}}$	1,45 1,55 1,60	1,70	V V V	
ゲート・エミッタ間しきい値電圧 Gate threshold voltage	$I_C = 2,60\text{mA}, V_{CE} = V_{GE}, T_{vj} = 25^{\circ}\text{C}$		$V_{G\text{Eth}}$	5,00	5,80	6,50	V
ゲート電荷量 Gate charge	$V_{GE} = -15\text{V} \dots +15\text{V}$		Q_G	0,57			μC
内蔵ゲート抵抗 Internal gate resistor	$T_{vj} = 25^{\circ}\text{C}$		$R_{G\text{int}}$	0,0			Ω
入力容量 Input capacitance	$f = 1\text{MHz}, T_{vj} = 25^{\circ}\text{C}, V_{CE} = 25\text{V}, V_{GE} = 0\text{V}$		C_{ies}	4,40			nF
帰還容量 Reverse transfer capacitance	$f = 1\text{MHz}, T_{vj} = 25^{\circ}\text{C}, V_{CE} = 25\text{V}, V_{GE} = 0\text{V}$		C_{res}	0,235			nF
コレクタ・エミッタ間遮断電流 Collector-emitter cut-off current	$V_{CE} = 1200\text{V}, V_{GE} = 0\text{V}, T_{vj} = 25^{\circ}\text{C}$		I_{CES}			1,0	mA
ゲート・エミッタ間漏れ電流 Gate-emitter leakage current	$V_{CE} = 0\text{V}, V_{GE} = 20\text{V}, T_{vj} = 25^{\circ}\text{C}$		I_{GES}			100	nA
ターンオン遅れ時間 (誘導負荷) Turn-on delay time, inductive load	$I_C = 30\text{A}, V_{CE} = 400\text{V}$ $V_{GE} = 15\text{V}$ $R_{G\text{on}} = 6,8\Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	$t_{d\text{on}}$	0,03 0,03 0,03			μs μs μs
ターンオン上昇時間 (誘導負荷) Rise time, inductive load	$I_C = 30\text{A}, V_{CE} = 400\text{V}$ $V_{GE} = 15\text{V}$ $R_{G\text{on}} = 6,8\Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	t_r	0,01 0,012 0,012			μs μs μs
ターンオフ遅れ時間 (誘導負荷) Turn-off delay time, inductive load	$I_C = 30\text{A}, V_{CE} = 400\text{V}$ $V_{GE} = 15\text{V}$ $R_{G\text{off}} = 6,8\Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	$t_{d\text{off}}$	0,25 0,32 0,34			μs μs μs
ターンオフ下降時間 (誘導負荷) Fall time, inductive load	$I_C = 30\text{A}, V_{CE} = 400\text{V}$ $V_{GE} = 15\text{V}$ $R_{G\text{off}} = 6,8\Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	t_f	0,025 0,04 0,045			μs μs μs
ターンオンスイッチング損失 Turn-on energy loss per pulse	$I_C = 30\text{A}, V_{CE} = 400\text{V}, L_S = 40\text{nH}$ $V_{GE} = 15\text{V}, di/dt = 2600\text{A}/\mu\text{s} (T_{vj} = 150^{\circ}\text{C})$ $R_{G\text{on}} = 6,8\Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	E_{on}	0,40 0,60 0,70			mJ mJ mJ
ターンオフスイッチング損失 Turn-off energy loss per pulse	$I_C = 30\text{A}, V_{CE} = 400\text{V}, L_S = 40\text{nH}$ $V_{GE} = 15\text{V}, du/dt = 2400\text{V}/\mu\text{s} (T_{vj} = 150^{\circ}\text{C})$ $R_{G\text{off}} = 6,8\Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	E_{off}	1,05 1,60 1,75			mJ mJ mJ
短絡電流 SC data	$V_{GE} \leq 15\text{V}, V_{CC} = 800\text{V}$ $V_{CE\text{max}} = V_{CES} - L_{SCE} \cdot di/dt$ $t_P \leq 10\mu\text{s}, T_{vj} = 150^{\circ}\text{C}$		I_{SC}	270			A
ジャンクション・ケース間熱抵抗 Thermal resistance, junction to case	IGBT部 (1素子当り) / per IGBT		R_{thJC}	0,500	0,550		K/W

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ケース・ヒートシンク間熱抵抗 Thermal resistance, case to heatsink	IGBT部 (1 素子当り) / per IGBT $\lambda_{\text{Paste}} = 1 \text{ W/(m}\cdot\text{K)}$ / $\lambda_{\text{grease}} = 1 \text{ W/(m}\cdot\text{K)}$	R_{thCH}		0,450		K/W
動作温度 Temperature under switching conditions		$T_{\text{vj op}}$	-40		150	°C

ダイオード, D1 / D4 / Diode, D1 / D4

最大定格 / Maximum Rated Values

ピーク繰返し逆電圧 Repetitive peak reverse voltage	$T_{\text{vj}} = 25^\circ\text{C}$	V_{RRM}		1200		V
連続DC電流 Continuous DC forward current		I_{F}		30		A
ピーク繰返し順電流 Repetitive peak forward current	$t_{\text{p}} = 1 \text{ ms}$	I_{FRM}		50		A
電流二乗時間積 I^2t - value	$V_{\text{R}} = 0 \text{ V}, t_{\text{p}} = 10 \text{ ms}, T_{\text{vj}} = 125^\circ\text{C}$ $V_{\text{R}} = 0 \text{ V}, t_{\text{p}} = 10 \text{ ms}, T_{\text{vj}} = 150^\circ\text{C}$	I^2t		90,0 75,0		A ² s A ² s

電気的特性 / Characteristic Values

				min.	typ.	max.	
順電圧 Forward voltage	$I_{\text{F}} = 30 \text{ A}, V_{\text{GE}} = 0 \text{ V}$ $I_{\text{F}} = 30 \text{ A}, V_{\text{GE}} = 0 \text{ V}$ $I_{\text{F}} = 30 \text{ A}, V_{\text{GE}} = 0 \text{ V}$	$T_{\text{vj}} = 25^\circ\text{C}$ $T_{\text{vj}} = 125^\circ\text{C}$ $T_{\text{vj}} = 150^\circ\text{C}$	V_{F}		1,85 1,90 1,90	2,40	V V V
ピーク逆回復電流 Peak reverse recovery current	$I_{\text{F}} = 30 \text{ A}, -di_{\text{F}}/dt = 2600 \text{ A}/\mu\text{s} (T_{\text{vj}}=150^\circ\text{C})$ $V_{\text{R}} = 400 \text{ V}$ $V_{\text{GE}} = -15 \text{ V}$	$T_{\text{vj}} = 25^\circ\text{C}$ $T_{\text{vj}} = 125^\circ\text{C}$ $T_{\text{vj}} = 150^\circ\text{C}$	I_{RM}		72,0 80,0 82,0		A A A
逆回復電荷量 Recovered charge	$I_{\text{F}} = 30 \text{ A}, -di_{\text{F}}/dt = 2600 \text{ A}/\mu\text{s} (T_{\text{vj}}=150^\circ\text{C})$ $V_{\text{R}} = 400 \text{ V}$ $V_{\text{GE}} = -15 \text{ V}$	$T_{\text{vj}} = 25^\circ\text{C}$ $T_{\text{vj}} = 125^\circ\text{C}$ $T_{\text{vj}} = 150^\circ\text{C}$	Q_{r}		2,35 2,85 3,70		μC μC μC
逆回復損失 Reverse recovery energy	$I_{\text{F}} = 30 \text{ A}, -di_{\text{F}}/dt = 2600 \text{ A}/\mu\text{s} (T_{\text{vj}}=150^\circ\text{C})$ $V_{\text{R}} = 400 \text{ V}$ $V_{\text{GE}} = -15 \text{ V}$	$T_{\text{vj}} = 25^\circ\text{C}$ $T_{\text{vj}} = 125^\circ\text{C}$ $T_{\text{vj}} = 150^\circ\text{C}$	E_{rec}		0,80 1,30 1,35		mJ mJ mJ
ジャンクション・ケース間熱抵抗 Thermal resistance, junction to case	/Diode (1 素子当り) / per diode		R_{thJC}		0,950	1,05	K/W
ケース・ヒートシンク間熱抵抗 Thermal resistance, case to heatsink	/Diode (1 素子当り) / per diode $\lambda_{\text{Paste}} = 1 \text{ W/(m}\cdot\text{K)}$ / $\lambda_{\text{grease}} = 1 \text{ W/(m}\cdot\text{K)}$		R_{thCH}		0,850		K/W
動作温度 Temperature under switching conditions			$T_{\text{vj op}}$	-40		150	°C

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IGBT, T2 / T3 / IGBT, T2 / T3
最大定格 / Maximum Rated Values

コレクタ・エミッタ間電圧 Collector-emitter voltage	$T_{vj} = 25^{\circ}\text{C}$	V_{CES}	650	V
連続DCコレクタ電流 Continuous DC collector current	$T_C = 80^{\circ}\text{C}, T_{vj\max} = 175^{\circ}\text{C}$ $T_C = 25^{\circ}\text{C}, T_{vj\max} = 175^{\circ}\text{C}$	$I_{C\text{nom}}$ I_C	30 45	A A
繰り返しピークコレクタ電流 Repetitive peak collector current	$t_P = 1\text{ ms}$	I_{CRM}	60	A
トータル損失 Total power dissipation	$T_C = 25^{\circ}\text{C}, T_{vj\max} = 175^{\circ}\text{C}$	P_{tot}	150	W
ゲート・エミッタ間ピーク電圧 Gate-emitter peak voltage		V_{GES}	+/-20	V

電気的特性 / Characteristic Values

			min.	typ.	max.		
コレクタ・エミッタ間飽和電圧 Collector-emitter saturation voltage	$I_C = 30\text{ A}, V_{GE} = 15\text{ V}$ $I_C = 30\text{ A}, V_{GE} = 15\text{ V}$ $I_C = 30\text{ A}, V_{GE} = 15\text{ V}$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	$V_{CE\text{sat}}$	1,55 1,70 1,80	2,00	V V V	
ゲート・エミッタ間しきい値電圧 Gate threshold voltage	$I_C = 0,30\text{ mA}, V_{CE} = V_{GE}, T_{vj} = 25^{\circ}\text{C}$		V_{GEth}	4,90	5,80	6,50	V
ゲート電荷量 Gate charge	$V_{GE} = -15\text{ V} \dots +15\text{ V}$		Q_G	0,30			μC
内蔵ゲート抵抗 Internal gate resistor	$T_{vj} = 25^{\circ}\text{C}$		R_{Gint}	0,0			Ω
入力容量 Input capacitance	$f = 1\text{ MHz}, T_{vj} = 25^{\circ}\text{C}, V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}$		C_{ies}	1,65			nF
帰還容量 Reverse transfer capacitance	$f = 1\text{ MHz}, T_{vj} = 25^{\circ}\text{C}, V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}$		C_{res}	0,051			nF
コレクタ・エミッタ間遮断電流 Collector-emitter cut-off current	$V_{CE} = 650\text{ V}, V_{GE} = 0\text{ V}, T_{vj} = 25^{\circ}\text{C}$		I_{CES}			1,0	mA
ゲート・エミッタ間漏れ電流 Gate-emitter leakage current	$V_{CE} = 0\text{ V}, V_{GE} = 20\text{ V}, T_{vj} = 25^{\circ}\text{C}$		I_{GES}			100	nA
ターンオン遅れ時間 (誘導負荷) Turn-on delay time, inductive load	$I_C = 30\text{ A}, V_{CE} = 400\text{ V}$ $V_{GE} = 15\text{ V}$ $R_{Gon} = 10\ \Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	t_{don}	0,022 0,025 0,025			μs μs μs
ターンオン上昇時間 (誘導負荷) Rise time, inductive load	$I_C = 30\text{ A}, V_{CE} = 400\text{ V}$ $V_{GE} = 15\text{ V}$ $R_{Gon} = 10\ \Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	t_r	0,01 0,012 0,012			μs μs μs
ターンオフ遅れ時間 (誘導負荷) Turn-off delay time, inductive load	$I_C = 30\text{ A}, V_{CE} = 400\text{ V}$ $V_{GE} = 15\text{ V}$ $R_{Goff} = 10\ \Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	t_{doff}	0,16 0,18 0,185			μs μs μs
ターンオフ下降時間 (誘導負荷) Fall time, inductive load	$I_C = 30\text{ A}, V_{CE} = 400\text{ V}$ $V_{GE} = 15\text{ V}$ $R_{Goff} = 10\ \Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	t_f	0,025 0,037 0,04			μs μs μs
ターンオンスイッチング損失 Turn-on energy loss per pulse	$I_C = 30\text{ A}, V_{CE} = 400\text{ V}, L_S = 40\text{ nH}$ $V_{GE} = 15\text{ V}, di/dt = 2600\text{ A}/\mu\text{s} (T_{vj} = 150^{\circ}\text{C})$ $R_{Gon} = 10\ \Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	E_{on}	0,34 0,50 0,53			mJ mJ mJ
ターンオフスイッチング損失 Turn-off energy loss per pulse	$I_C = 30\text{ A}, V_{CE} = 400\text{ V}, L_S = 40\text{ nH}$ $V_{GE} = 15\text{ V}, du/dt = 4700\text{ V}/\mu\text{s} (T_{vj} = 150^{\circ}\text{C})$ $R_{Goff} = 10\ \Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	E_{off}	0,85 1,15 1,20			mJ mJ mJ
短絡電流 SC data	$V_{GE} \leq 15\text{ V}, V_{CC} = 360\text{ V}$ $V_{CE\text{max}} = V_{CES} - L_{SCE} \cdot di/dt$	$t_P \leq 8\ \mu\text{s}, T_{vj} = 25^{\circ}\text{C}$ $t_P \leq 6\ \mu\text{s}, T_{vj} = 150^{\circ}\text{C}$	I_{SC}	210 150			A A
ジャンクション・ケース間熱抵抗 Thermal resistance, junction to case	IGBT部 (1素子当り) / per IGBT		R_{thJC}	0,900	1,00		K/W
ケース・ヒートシンク間熱抵抗 Thermal resistance, case to heatsink	IGBT部 (1素子当り) / per IGBT $\lambda_{\text{Paste}} = 1\text{ W}/(\text{m}\cdot\text{K})$ / $\lambda_{\text{grease}} = 1\text{ W}/(\text{m}\cdot\text{K})$		R_{thCH}	0,850			K/W
動作温度 Temperature under switching conditions			$T_{vj\text{op}}$	-40	150		$^{\circ}\text{C}$

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ダイオード, D2 / D3 / Diode, D2 / D3
最大定格 / Maximum Rated Values

ピーク繰返し逆電圧 Repetitive peak reverse voltage	$T_{vj} = 25^{\circ}\text{C}$	V_{RRM}	650	V
連続DC電流 Continuous DC forward current		I_F	30	A
ピーク繰返し順電流 Repetitive peak forward current	$t_P = 1\text{ ms}$	I_{FRM}	60	A
電流二乗時間積 I^2t - value	$V_R = 0\text{ V}, t_P = 10\text{ ms}, T_{vj} = 125^{\circ}\text{C}$ $V_R = 0\text{ V}, t_P = 10\text{ ms}, T_{vj} = 150^{\circ}\text{C}$	I^2t	130 115	A^2s A^2s

電気的特性 / Characteristic Values

			min.	typ.	max.	
順電圧 Forward voltage	$I_F = 30\text{ A}, V_{GE} = 0\text{ V}$ $I_F = 30\text{ A}, V_{GE} = 0\text{ V}$ $I_F = 30\text{ A}, V_{GE} = 0\text{ V}$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	V_F	1,45 1,35 1,30	1,65	V V V
ピーク逆回復電流 Peak reverse recovery current	$I_F = 30\text{ A}, -di_F/dt = 2600\text{ A}/\mu\text{s} (T_{vj}=150^{\circ}\text{C})$ $V_R = 400\text{ V}$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	I_{RM}	42,0 48,0 50,0		A A A
逆回復電荷量 Recovered charge	$I_F = 30\text{ A}, -di_F/dt = 2600\text{ A}/\mu\text{s} (T_{vj}=150^{\circ}\text{C})$ $V_R = 400\text{ V}$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	Q_r	1,80 2,40 2,60		μC μC μC
逆回復損失 Reverse recovery energy	$I_F = 30\text{ A}, -di_F/dt = 2600\text{ A}/\mu\text{s} (T_{vj}=150^{\circ}\text{C})$ $V_R = 400\text{ V}$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	E_{rec}	0,45 0,65 0,73		mJ mJ mJ
ジャンクション・ケース間熱抵抗 Thermal resistance, junction to case	/Diode (1 素子当り) / per diode		R_{thJC}	1,00	1,20	K/W
ケース・ヒートシンク間熱抵抗 Thermal resistance, case to heatsink	/Diode (1 素子当り) / per diode $\lambda_{Paste} = 1\text{ W}/(\text{m}\cdot\text{K}) / \lambda_{grease} = 1\text{ W}/(\text{m}\cdot\text{K})$		R_{thCH}	0,700		K/W
動作温度 Temperature under switching conditions			$T_{vj\text{ op}}$	-40	150	$^{\circ}\text{C}$

NTC-サーミスタ / NTC-Thermistor

電気的特性 / Characteristic Values

			min.	typ.	max.	
定格抵抗値 Rated resistance	$T_{NTC} = 25^{\circ}\text{C}$		R_{25}	5,00		k Ω
R100の偏差 Deviation of R100	$T_{NTC} = 100^{\circ}\text{C}, R_{100} = 493\ \Omega$		$\Delta R/R$	-5	5	%
損失 Power dissipation	$T_{NTC} = 25^{\circ}\text{C}$		P_{25}		20,0	mW
B-定数 B-value	$R_2 = R_{25} \exp [B_{25/50}(1/T_2 - 1/(298,15\text{ K}))]$		$B_{25/50}$	3375		K
B-定数 B-value	$R_2 = R_{25} \exp [B_{25/80}(1/T_2 - 1/(298,15\text{ K}))]$		$B_{25/80}$	3411		K
B-定数 B-value	$R_2 = R_{25} \exp [B_{25/100}(1/T_2 - 1/(298,15\text{ K}))]$		$B_{25/100}$	3433		K

適切なアプリケーションノートによる仕様
Specification according to the valid application note.

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モジュール / Module

絶縁耐圧 Isolation test voltage	RMS, f = 50 Hz, t = 1 min.	V _{ISOL}	3,0		kV
内部絶縁 Internal isolation	基礎絶縁 (クラス1, IEC 61140) basic insulation (class 1, IEC 61140)		Al ₂ O ₃		
沿面距離 Creepage distance	連絡方法 - ヒートシンク / terminal to heatsink 連絡方法 - 連絡方法 / terminal to terminal		11,5 6,3		mm
空間距離 Clearance	連絡方法 - ヒートシンク / terminal to heatsink 連絡方法 - 連絡方法 / terminal to terminal		10,0 5,0		mm
相対トラッキング指数 Comperative tracking index		CTI	> 200		
			min.	typ.	max.
内部インダクタンス Stray inductance module		L _{sCE}		30	nH
パワーターミナル・チップ間抵抗 Module lead resistance, terminals - chip	T _c = 25°C, /スイッチ / per switch	R _{CC'+EE'} R _{AA'+CC'}		5,00 6,00	mΩ
保存温度 Storage temperature		T _{stg}	-40		125 °C
Anpresskraft für mech. Bef. pro Feder mounting force per clamp		F	40	-	80 N
質量 Weight		G		24	g

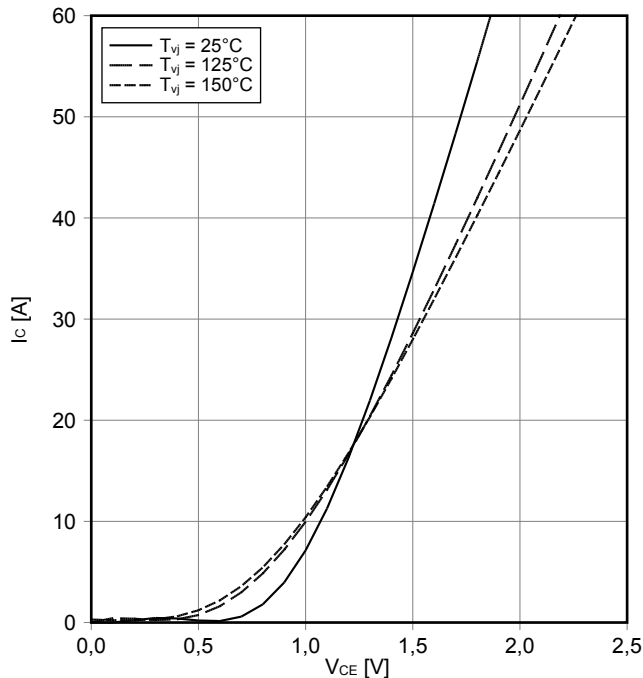
Der Strom im Dauerbetrieb ist auf 25A effektiv pro Anschlusspin begrenzt.
The current under continuous operation is limited to 25A rms per connector pin.

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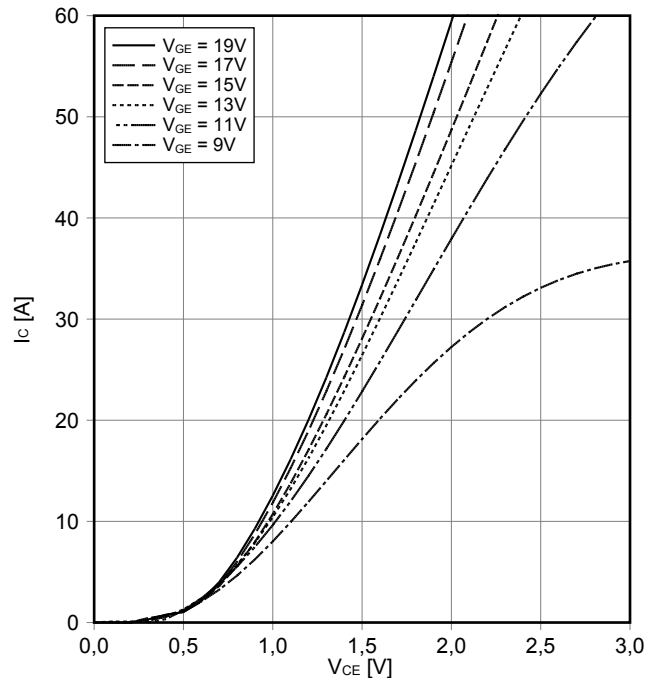
出力特性 IGBT, T1-T4 (Typical)
output characteristic IGBT, T1-T4 (typical)

$I_C = f(V_{CE})$
 $V_{GE} = 15\text{ V}$



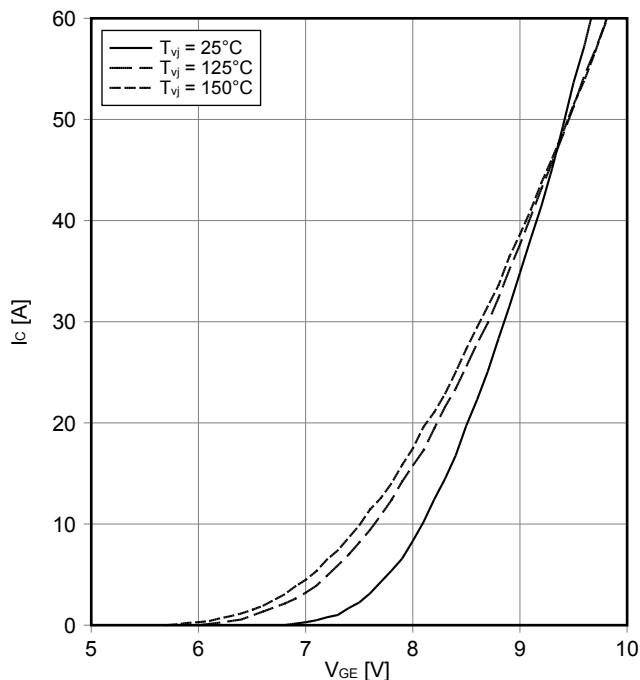
出力特性 IGBT, T1-T4 (Typical)
output characteristic IGBT, T1-T4 (typical)

$I_C = f(V_{CE})$
 $T_{vj} = 150^\circ\text{C}$



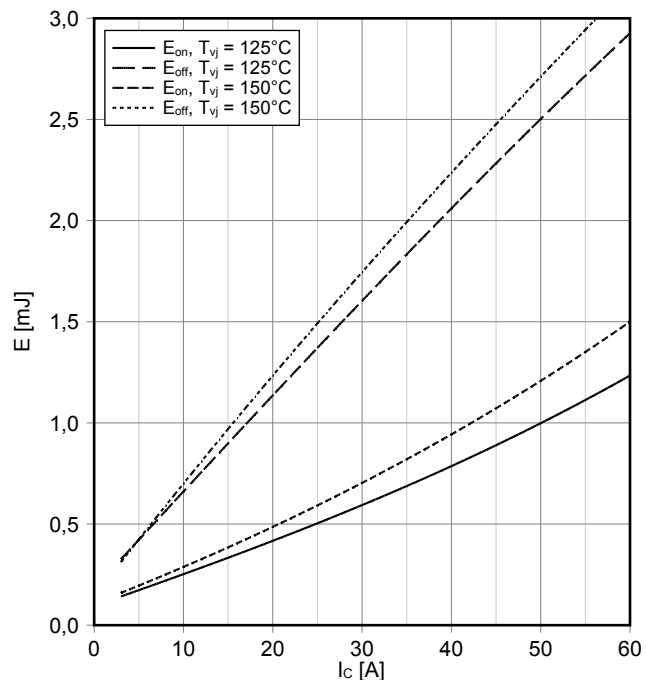
伝達特性 IGBT, T1-T4 (Typical)
transfer characteristic IGBT, T1-T4 (typical)

$I_C = f(V_{GE})$
 $V_{CE} = 20\text{ V}$



スイッチング損失 IGBT, T1-T4 (Typical)
switching losses IGBT, T1-T4 (typical)

$E_{on} = f(I_C)$, $E_{off} = f(I_C)$
 $V_{GE} = \pm 15\text{ V}$, $R_{Gon} = 6.8\ \Omega$, $R_{Goff} = 6.8\ \Omega$, $V_{CE} = 400\text{ V}$

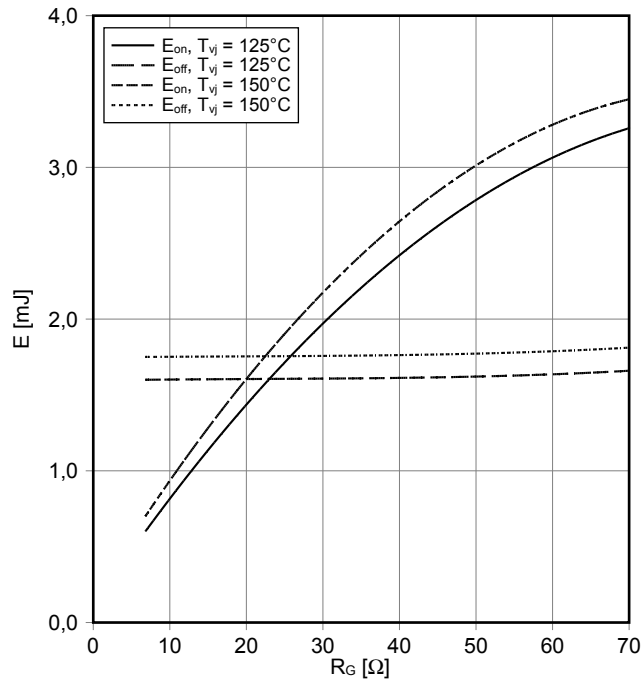


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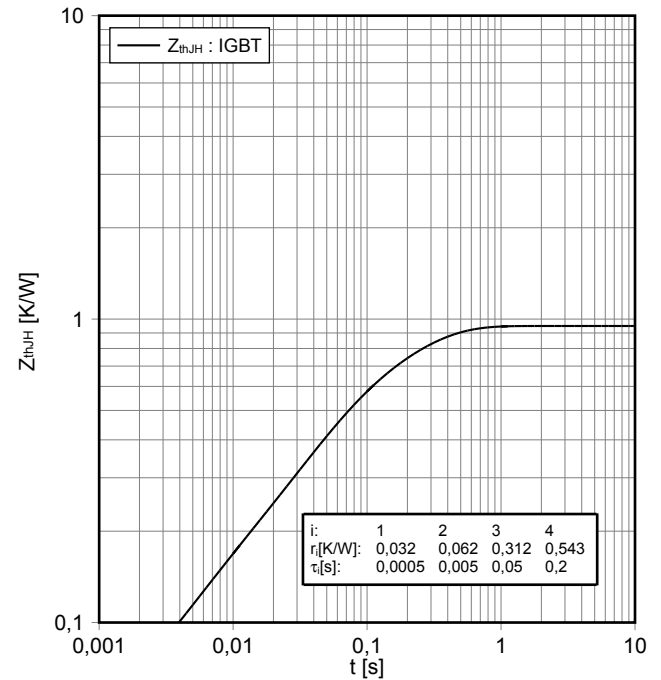
スイッチング損失 IGBT, T1-T4 (Typical)
switching losses IGBT, T1-T4 (typical)

$E_{on} = f(R_G)$, $E_{off} = f(R_G)$
 $V_{GE} = \pm 15\text{ V}$, $I_C = 30\text{ A}$, $V_{CE} = 400\text{ V}$



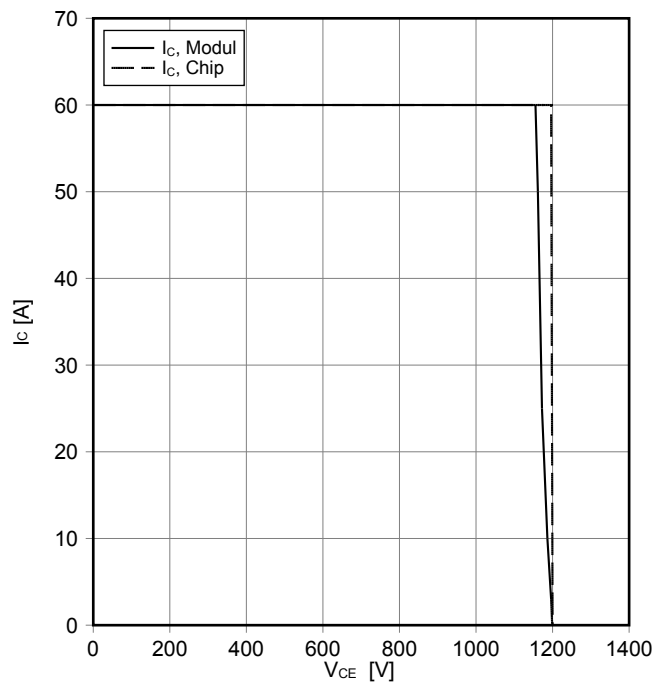
過渡熱インピーダンス IGBT, T1-T4
transient thermal impedance IGBT, T1-T4

$Z_{thJH} = f(t)$



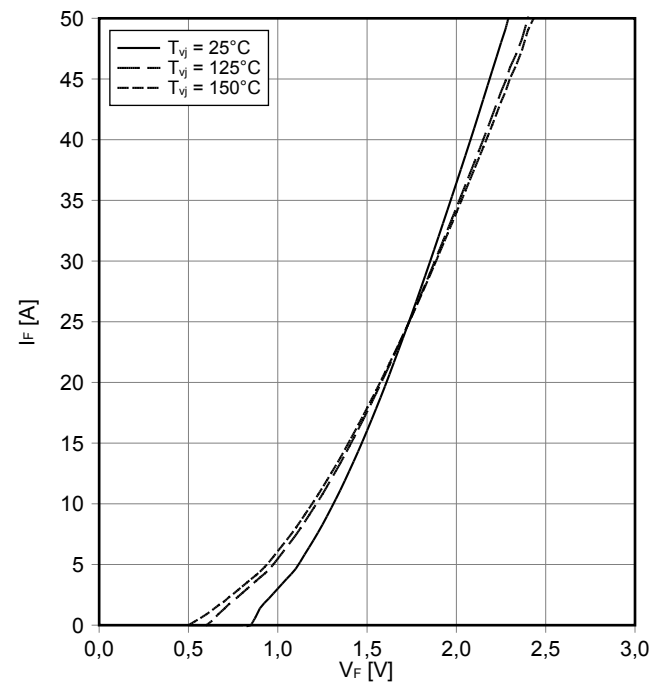
逆バイアス安全動作領域 IGBT, T1-T4 (RBSOA)
reverse bias safe operating area IGBT, T1-T4 (RBSOA)

$I_C = f(V_{CE})$
 $V_{GE} = \pm 15\text{ V}$, $R_{Goff} = 6.8\ \Omega$, $T_{vj} = 150^\circ\text{C}$



順電圧特性 ダイオード, D1 / D4 (typical)
forward characteristic of Diode, D1 / D4 (typical)

$I_F = f(V_F)$

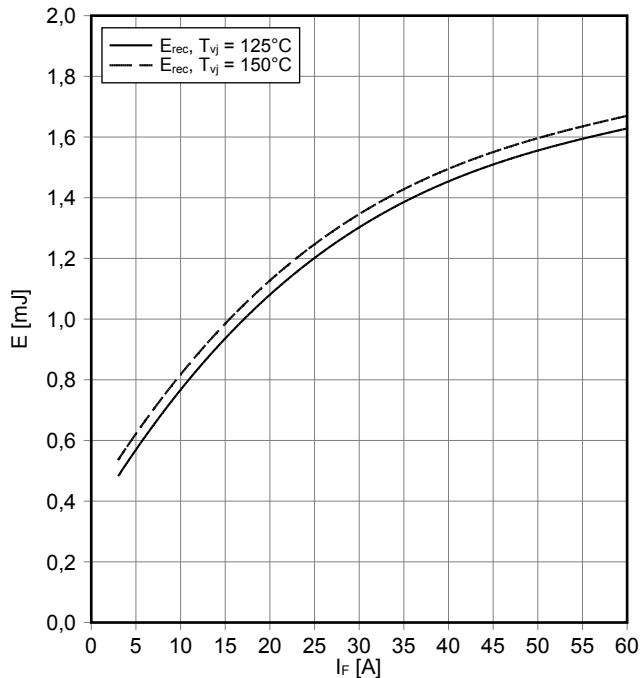


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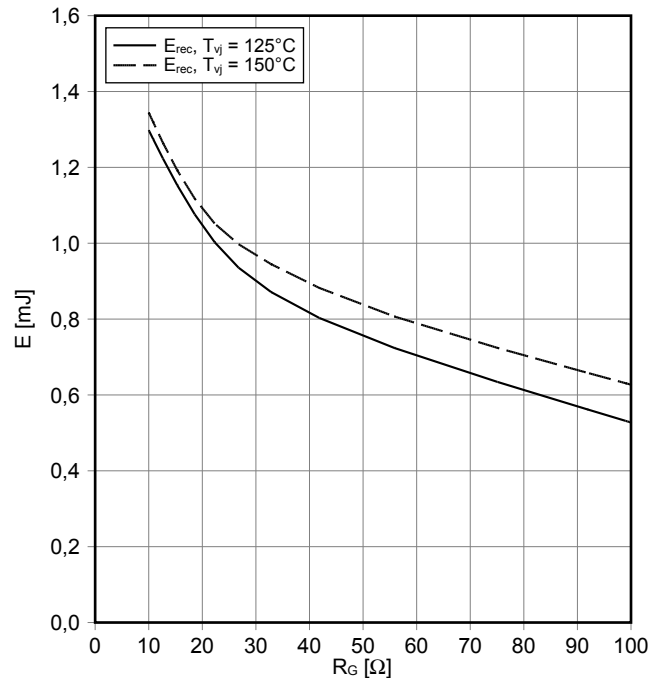
スイッチング損失 ダイオード, D1 / D4 (Typical)
switching losses Diode, D1 / D4 (typical)

$E_{rec} = f(I_F)$
 $R_{Gon} = 10 \Omega, V_{CE} = 400 V$



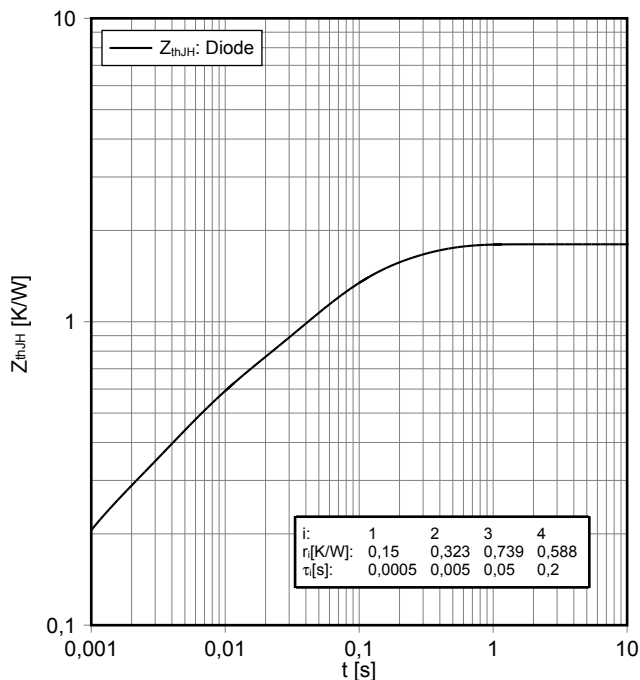
スイッチング損失 ダイオード, D1 / D4 (Typical)
switching losses Diode, D1 / D4 (typical)

$E_{rec} = f(R_G)$
 $I_F = 30 A, V_{CE} = 400 V$



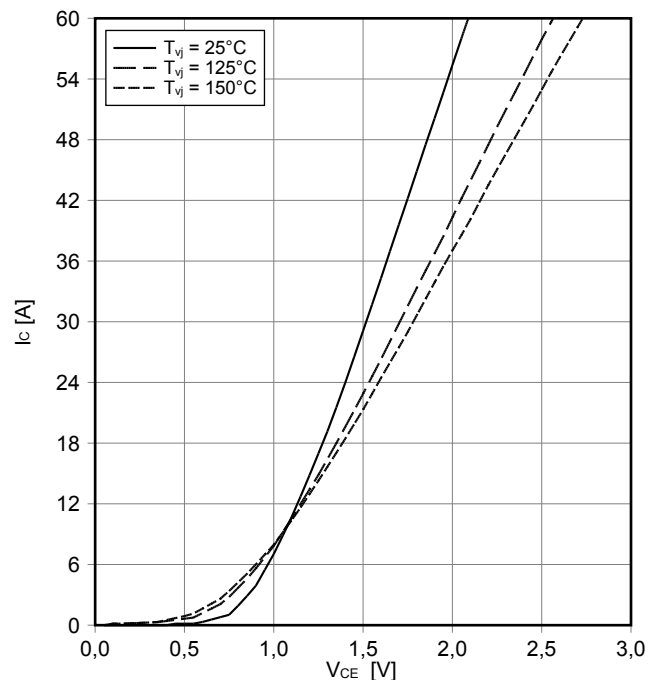
過渡熱インピーダンス ダイオード, D1 / D4
transient thermal impedance Diode, D1 / D4

$Z_{thJH} = f(t)$



出力特性 IGBT, T2 / T3 (Typical)
output characteristic IGBT, T2 / T3 (typical)

$I_C = f(V_{CE})$
 $V_{GE} = 15 V$

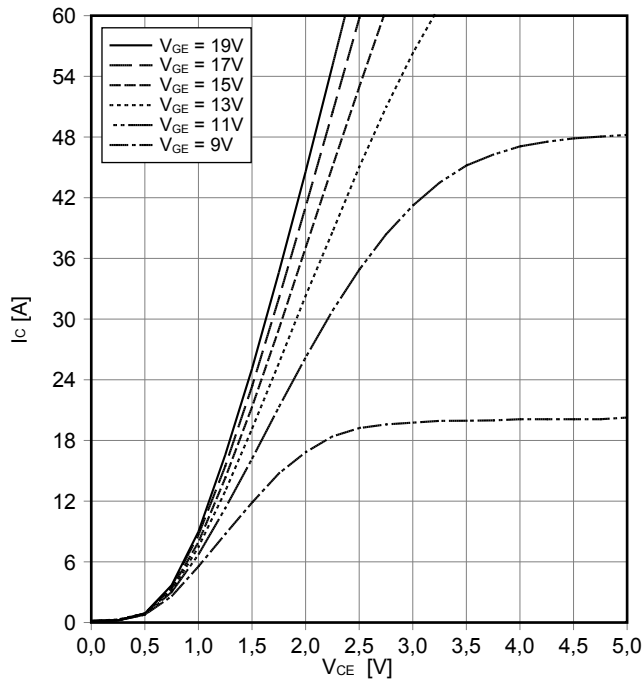


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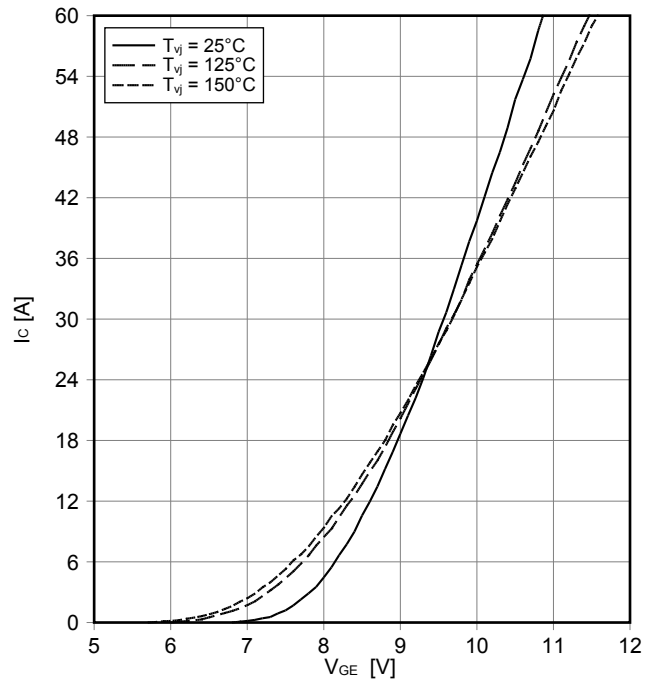
出力特性 IGBT, T2 / T3 (Typical)
output characteristic IGBT, T2 / T3 (typical)

$I_C = f(V_{CE})$
 $T_{vj} = 150^\circ\text{C}$



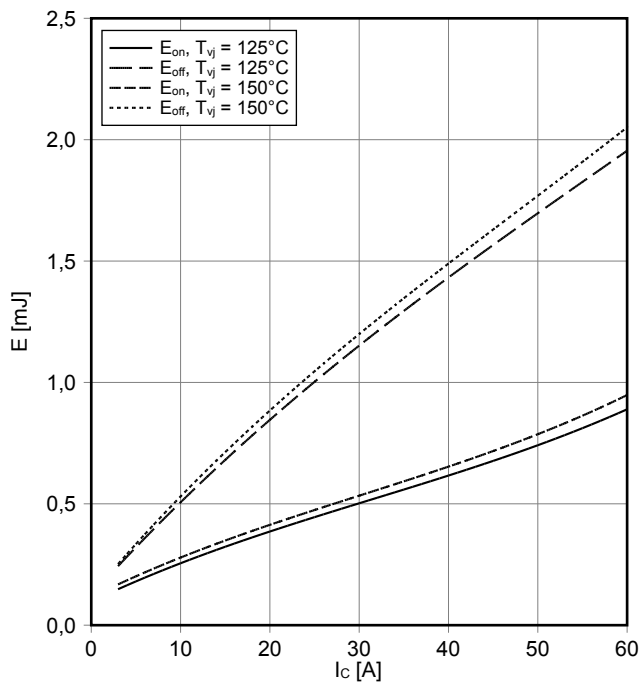
伝達特性 IGBT, T2 / T3 (Typical)
transfer characteristic IGBT, T2 / T3 (typical)

$I_C = f(V_{GE})$
 $V_{CE} = 20\text{ V}$



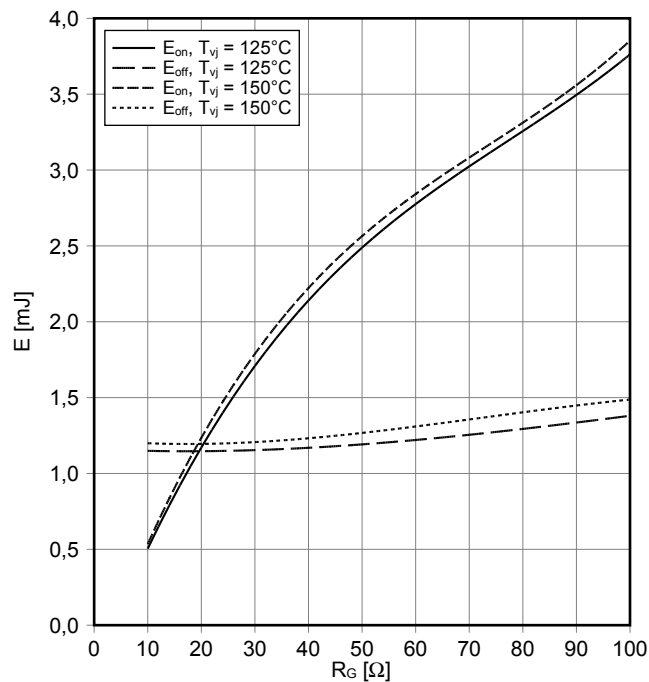
スイッチング損失 IGBT, T2 / T3 (Typical)
switching losses IGBT, T2 / T3 (typical)

$E_{on} = f(I_C), E_{off} = f(I_C)$
 $V_{GE} = \pm 15\text{ V}, R_{Gon} = 10\ \Omega, R_{Goff} = 10\ \Omega, V_{CE} = 400\text{ V}$



スイッチング損失 IGBT, T2 / T3 (Typical)
switching losses IGBT, T2 / T3 (typical)

$E_{on} = f(R_G), E_{off} = f(R_G)$
 $V_{GE} = \pm 15\text{ V}, I_C = 30\text{ A}, V_{CE} = 400\text{ V}$

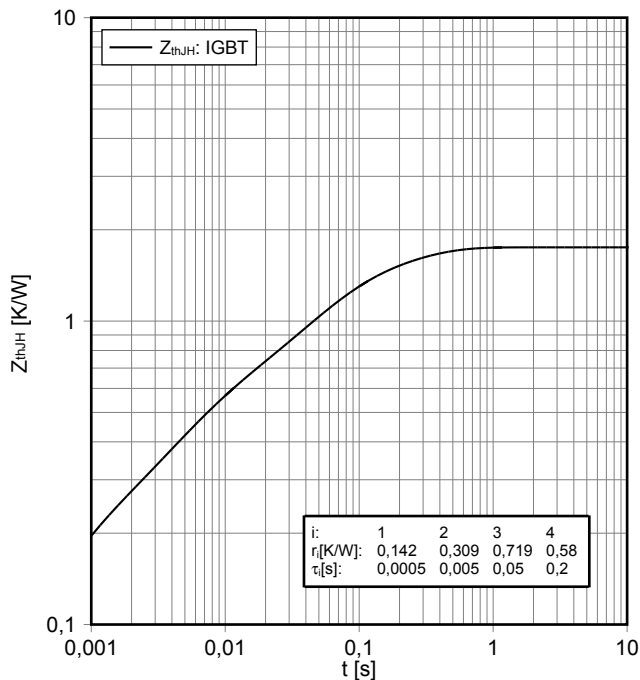


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過渡熱インピーダンス IGBT, T2 / T3
transient thermal impedance IGBT, T2 / T3

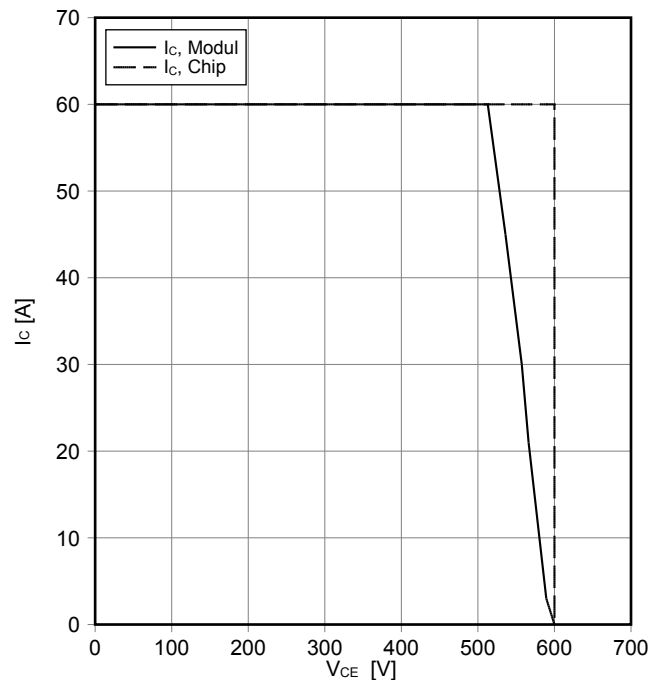
$Z_{thJH} = f(t)$



逆バイアス安全動作領域 IGBT, T2 / T3 (RBSOA)
reverse bias safe operating area IGBT, T2 / T3 (RBSOA)

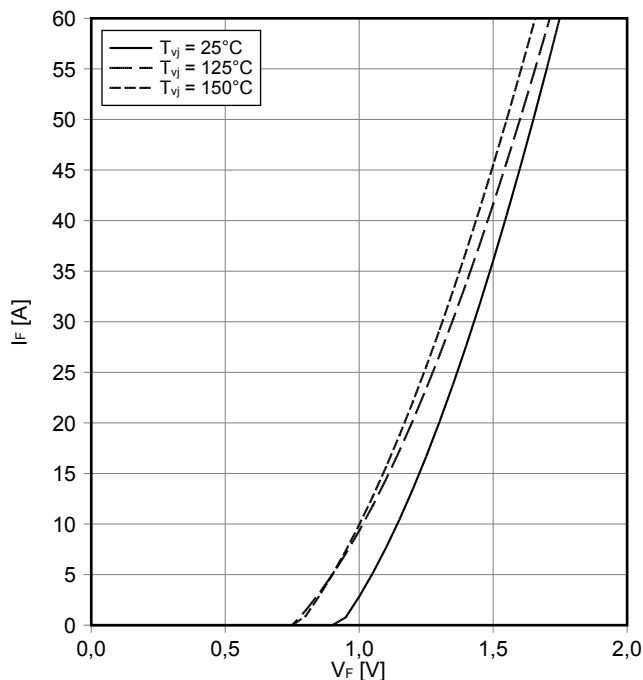
$I_C = f(V_{CE})$

$V_{GE} = \pm 15 V, R_{Goff} = 10 \Omega, T_{vj} = 150^\circ C$



順電圧特性 ダイオード, D2 / D3 (typical)
forward characteristic of Diode, D2 / D3 (typical)

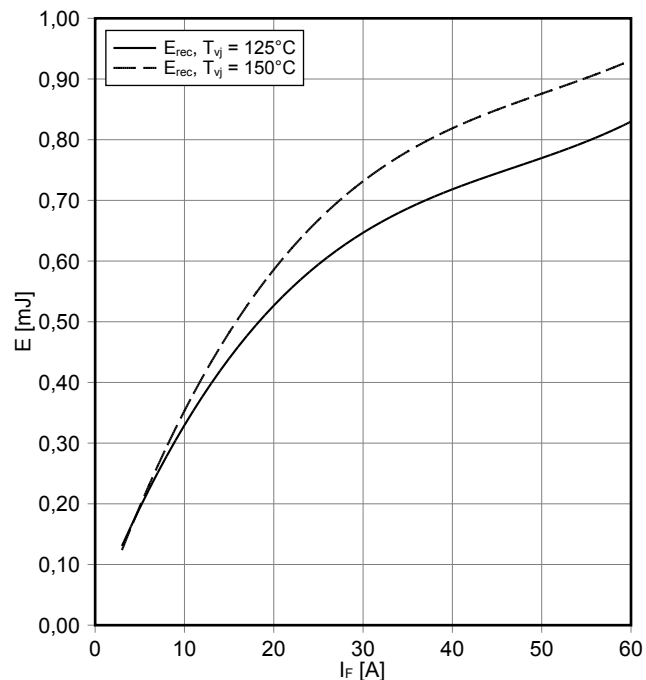
$I_F = f(V_F)$



スイッチング損失 ダイオード, D2 / D3 (Typical)
switching losses Diode, D2 / D3 (typical)

$E_{rec} = f(I_F)$

$R_{Gon} = 6.8 \Omega, V_{CE} = 400 V$

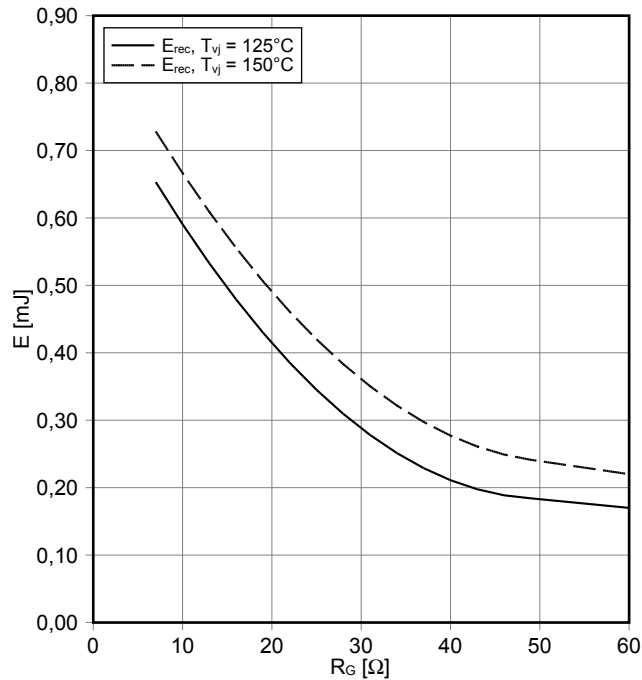


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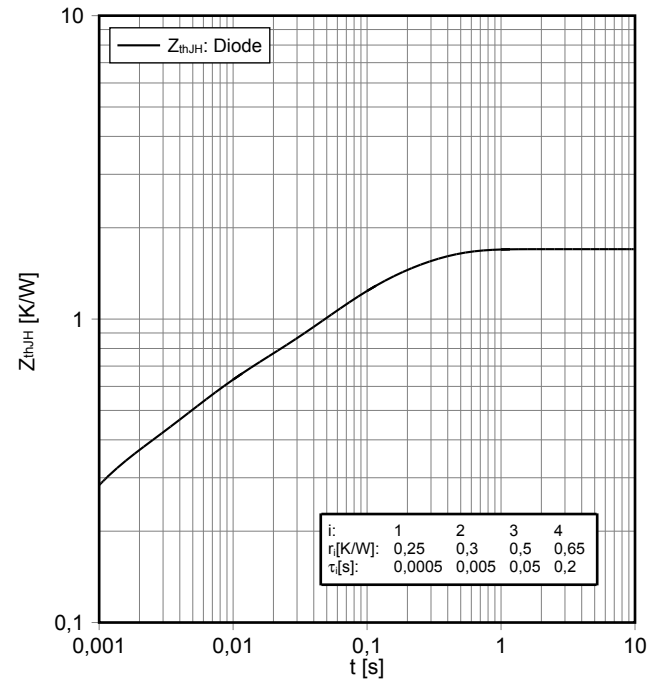
スイッチング損失 ダイオード, D2 / D3 (Typical)
switching losses Diode, D2 / D3 (typical)

$E_{rec} = f(R_G)$
 $I_F = 30\text{ A}, V_{CE} = 400\text{ V}$



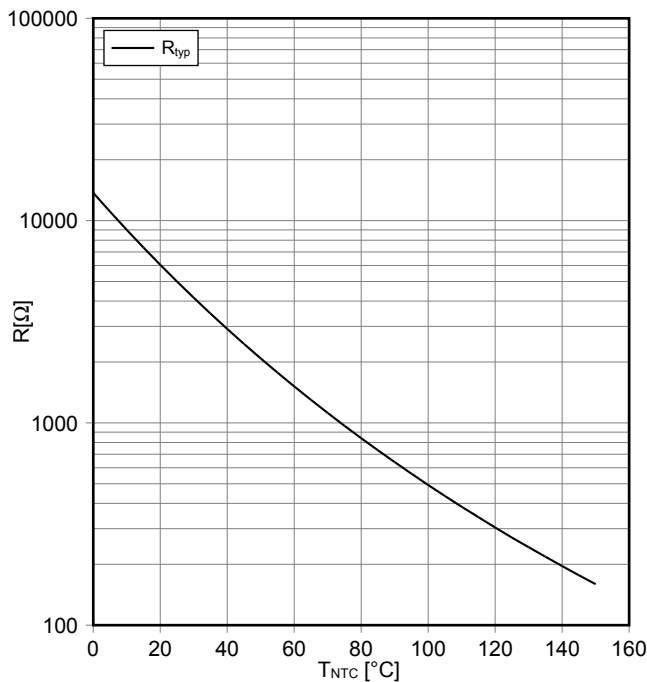
過渡熱インピーダンス ダイオード, D2 / D3
transient thermal impedance Diode, D2 / D3

$Z_{thJH} = f(t)$



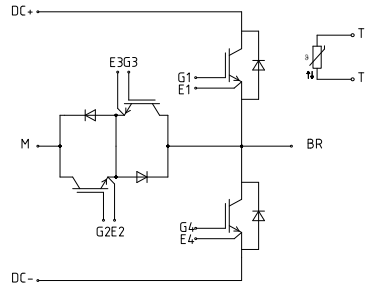
NTC-サーミスタ サーミスタの温度特性
NTC-Thermistor-temperature characteristic (typical)

$R = f(T)$

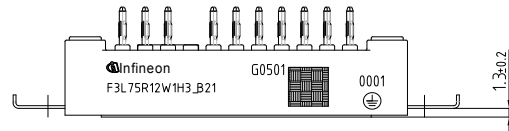
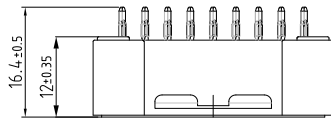


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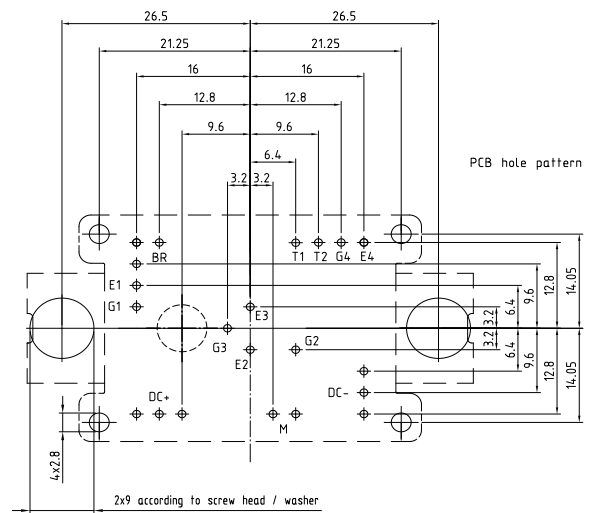
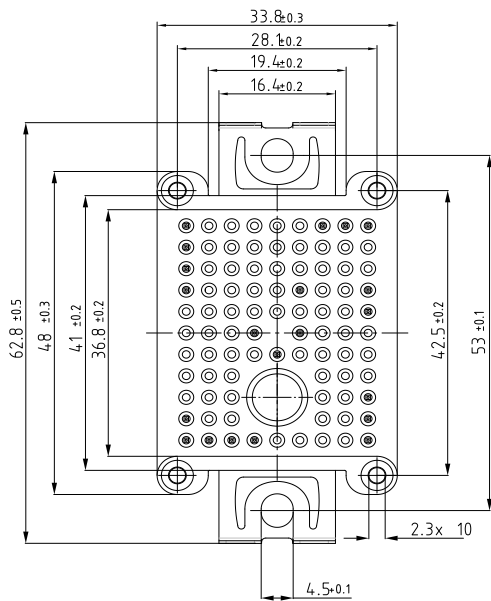
回路図 / Circuit diagram



パッケージ概要 / Package outlines



- Pin-Grid 3.2mm
- Tolerance of PCB hole pattern $\pm \phi 0.1$
- Hole specification for contacts see AN 2009-01
- Diameters of drill $\phi 1.15\text{mm}$
and copper thickness in hole 25-50 μm



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