



Dual N-Channel 100 V (D-S) MOSFET

PRODUCT SUMMARY			
V _{DS} (V)	R _{DS(on)} (Ω) Max.	I _D (A) ^a	Q _g (Typ.)
100	0.017 at V _{GS} = 10 V	36.7	12.2 nC
	0.018 at V _{GS} = 7.5 V	35.7	
	0.020 at V _{GS} = 6 V	33.9	

FEATURES

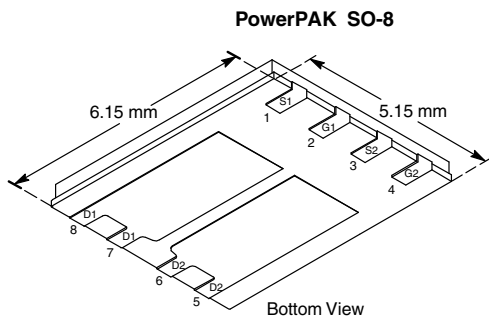
- TrenchFET[®] Power MOSFET
- 100 % R_g and UIS Tested
- Material categorization:
For definitions of compliance please see
www.vishay.com/doc?99912



RoHS
COMPLIANT
HALOGEN
FREE

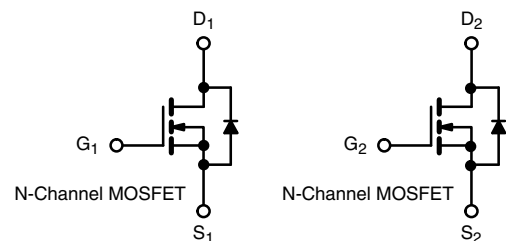
APPLICATIONS

- Primary Side Switching
- Synchronous Rectification
- DC/AC Inverters



Ordering Information:

Si7252DP-T1-GE3 (Lead (Pb)-free and Halogen-free)



ABSOLUTE MAXIMUM RATINGS (T _A = 25 °C, unless otherwise noted)				
Parameter	Symbol	Limit	Unit	
Drain-Source Voltage	V _{DS}	100	V	
Gate-Source Voltage	V _{GS}	± 20		
Continuous Drain Current (T _J = 150 °C)	I _D	T _C = 25 °C	36.7	A
		T _C = 85 °C	29.2	
		T _A = 25 °C	10.1 ^{b, c}	
		T _A = 85 °C	8 ^{b, c}	
Pulsed Drain Current (t = 300 μs)	I _{DM}	80		
Continuous Source-Drain Diode Current	I _S	T _C = 25 °C	38	
		T _A = 25 °C	2.9 ^{b, c}	
Single Pulse Avalanche Current	I _{AS}	20		
Single Pulse Avalanche Energy	E _{AS}	20	mJ	
Maximum Power Dissipation	P _D	T _C = 25 °C	46	W
		T _C = 85 °C	29	
		T _A = 25 °C	3.5 ^{b, c}	
		T _A = 85 °C	2.2 ^{b, c}	
Operating Junction and Storage Temperature Range	T _J , T _{stg}	- 55 to 150	°C	
Soldering Recommendations (Peak Temperature) ^{d, e}		260		

THERMAL RESISTANCE RATINGS				
Parameter	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient ^{b, f}	R _{thJA}	26	35	°C/W
Maximum Junction-to-Case (Drain)	R _{thJC}	2.2	2.7	

Notes:

- Based on T_C = 25 °C
- Surface mounted on 1" x 1" FR4 board.
- t = 10 s.
- See solder profile (www.vishay.com/doc?73257). The PowerPAK SO-8 is a leadless package. The end of the lead terminal is exposed copper (not plated) as a result of the singulation process in manufacturing. A solder fillet at the exposed copper tip cannot be guaranteed and is not required to ensure adequate bottom side solder interconnection.
- Rework conditions: manual soldering with a soldering iron is not recommended for leadless components.
- Maximum under steady state conditions is 85 °C/W.

SPECIFICATIONS (T _J = 25 °C, unless otherwise noted)							
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit	
Static							
Drain-Source Breakdown Voltage	V _{DS}	V _{GS} = 0 V, I _D = 250 μA	100			V	
V _{DS} Temperature Coefficient	ΔV _{DS} /T _J	I _D = 250 μA		67		mV/°C	
V _{GS(th)} Temperature Coefficient	ΔV _{GS(th)} /T _J			- 5.7			
Gate-Source Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	1.5		3.5	V	
Gate-Source Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 20 V			± 100	nA	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 100 V, V _{GS} = 0 V			1	μA	
		V _{DS} = 100 V, V _{GS} = 0 V, T _J = 55 °C			10		
On-State Drain Current ^a	I _{D(on)}	V _{DS} ≥ 5 V, V _{GS} = 10 V	30			A	
Drain-Source On-State Resistance ^a	R _{DS(on)}	V _{GS} = 10 V, I _D = 15 A		0.014	0.017	Ω	
		V _{GS} = 7.5 V, I _D = 12 A		0.015	0.018		
		V _{GS} = 6 V, I _D = 10 A		0.016	0.020		
Forward Transconductance ^a	g _{fs}	V _{DS} = 15 V, I _D = 15 A		40		S	
Dynamic^b							
Input Capacitance	C _{iss}	V _{DS} = 50 V, V _{GS} = 0 V, f = 1 MHz		1170		pF	
Output Capacitance	C _{oss}			311			
Reverse Transfer Capacitance	C _{rss}			33			
Total Gate Charge	Q _g	V _{DS} = 50 V, V _{GS} = 10 V, I _D = 10 A		17.5	27	nC	
		V _{DS} = 50 V, V _{GS} = 7.5 V, I _D = 10 A		13.4	20		
Gate-Source Charge	Q _{gs}	V _{DS} = 50 V, V _{GS} = 6 V, I _D = 10 A		12.2	18.5		
			Gate-Drain Charge	Q _{gd}			3.5
Out Charge	Q _{oss}						5.2
							27
Gate Resistance	R _g		f = 1 MHz	0.4	1.8	3.6	Ω
Turn-On Delay Time	t _{d(on)}		V _{DD} = 50 V, R _L = 5 Ω I _D ≅ 10 A, V _{GEN} = 7.5 V, R _g = 1 Ω		12	24	ns
Rise Time	t _r			13	26		
Turn-Off Delay Time	t _{d(off)}			18	36		
Fall Time	t _f			7	14		
Turn-On Delay Time	t _{d(on)}	V _{DD} = 50 V, R _L = 5 Ω I _D ≅ 10 A, V _{GEN} = 10 V, R _g = 1 Ω		8	16		
Rise Time	t _r			12	24		
Turn-Off Delay Time	t _{d(off)}			20	40		
Fall Time	t _f			7	14		
Drain-Source Body Diode Characteristics							
Continuous Source-Drain Diode Current	I _S	T _C = 25 °C			38	A	
Pulse Diode Forward Current	I _{SM}				80		
Body Diode Voltage	V _{SD}	I _S = 5 A, V _{GS} = 0 V		0.78	1.2	V	
Body Diode Reverse Recovery Time	t _{rr}	I _F = 10 A, di/dt = 100 A/μs, T _J = 25 °C		39	75	ns	
Body Diode Reverse Recovery Charge	Q _{rr}			53	100	nC	
Reverse Recovery Fall Time	t _a			26		ns	
Reverse Recovery Rise Time	t _b			13			

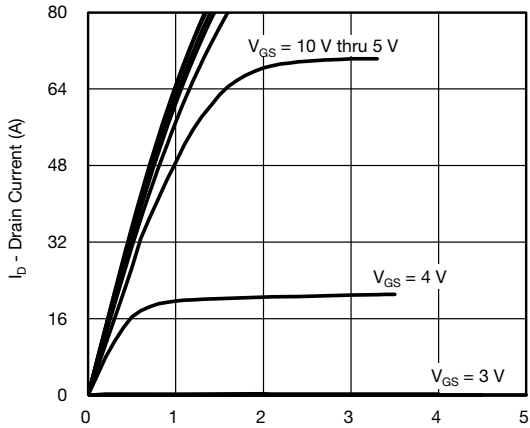
Notes:

- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2 %
b. Guaranteed by design, not subject to production testing.

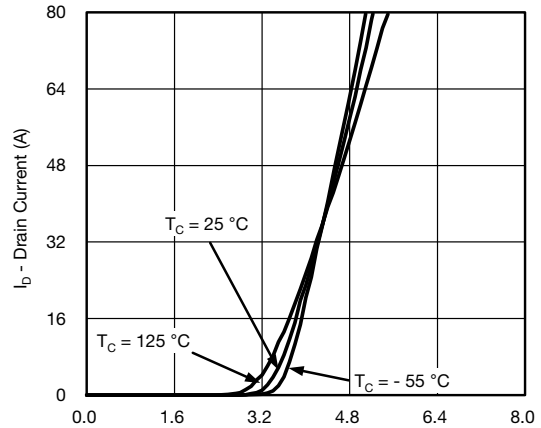
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.



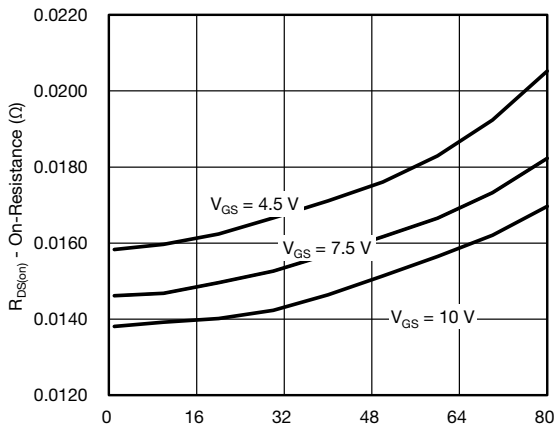
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



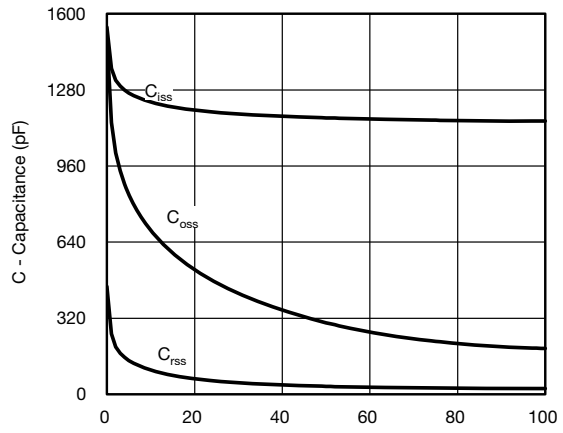
V_{DS} - Drain-to-Source Voltage (V)
Output Characteristics



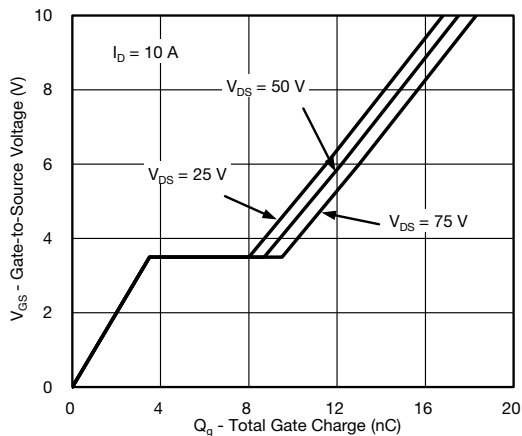
V_{GS} - Gate-to-Source Voltage (V)
Transfer Characteristics



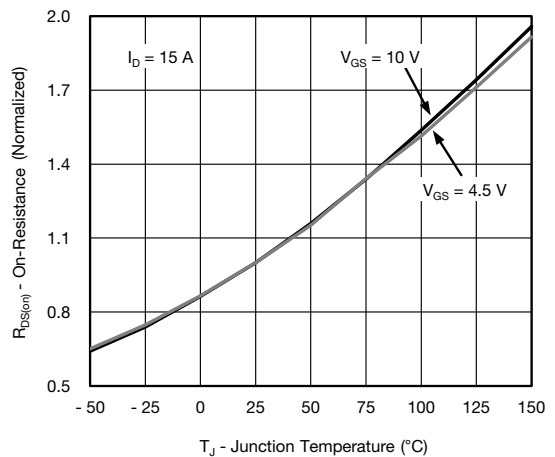
I_D - Drain Current (A)
On-Resistance vs. Drain Current and Gate Voltage



V_{DS} - Drain-to-Source Voltage (V)
Capacitance



Gate Charge



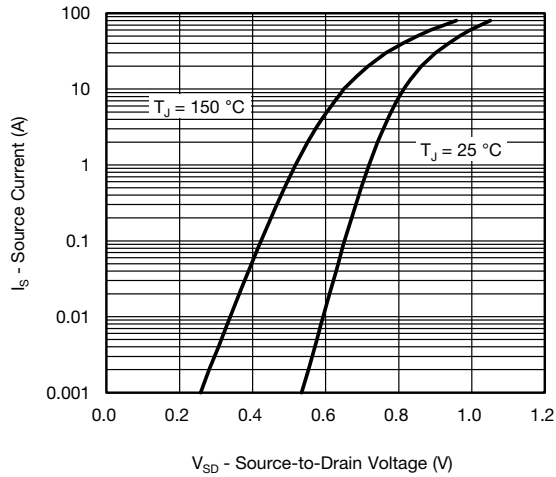
On-Resistance vs. Junction Temperature

Si7252DP

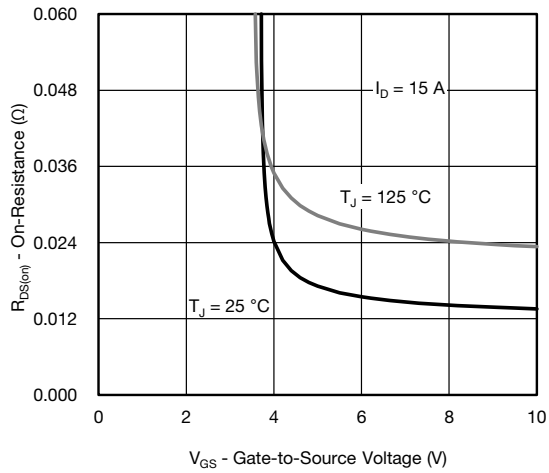
Vishay Siliconix



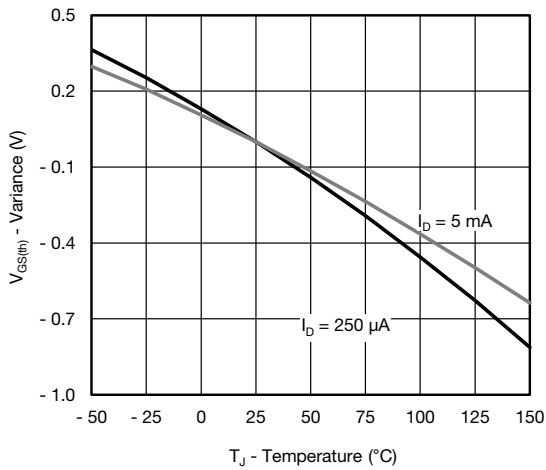
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



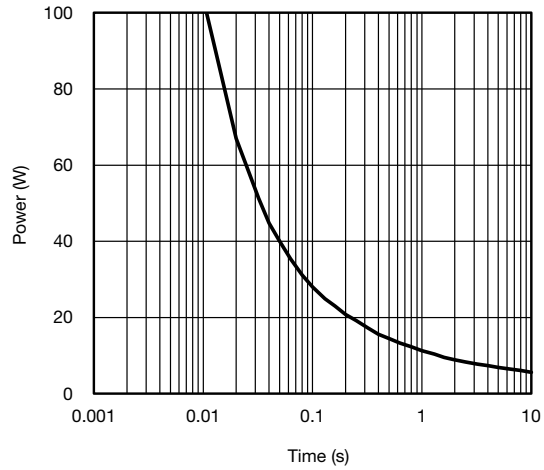
Source-Drain Diode Forward Voltage



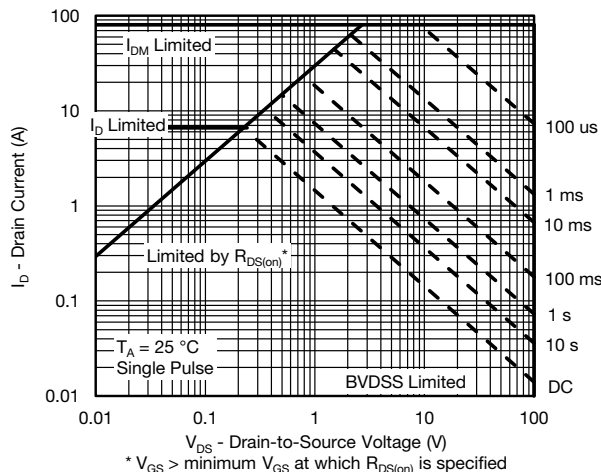
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



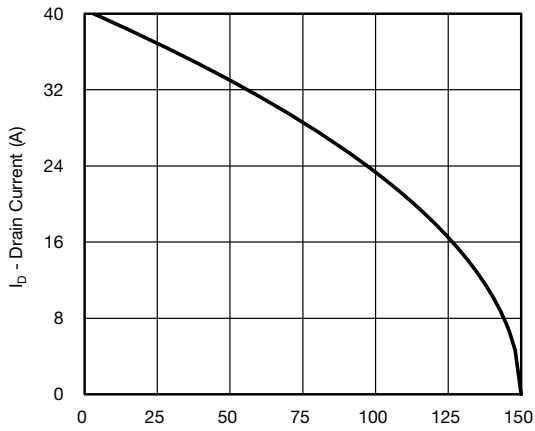
Single Pulse Power (Junction-to-Ambient)



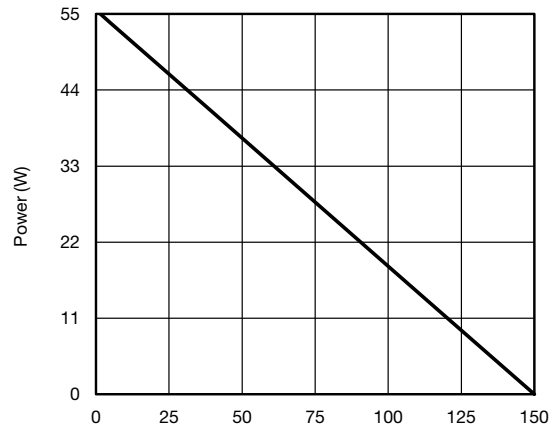
Safe Operating Area, Junction-to-Ambient



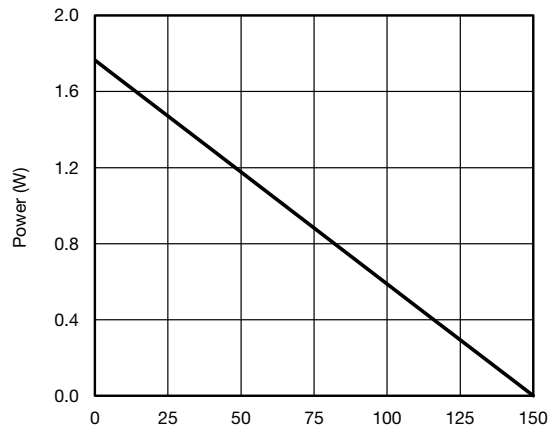
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



T_C - Case Temperature (°C)
Current Derating*



T_C - Case Temperature (°C)
Power Junction to Case



T_A - Ambient Temperature (°C)
Power Junction to Ambient

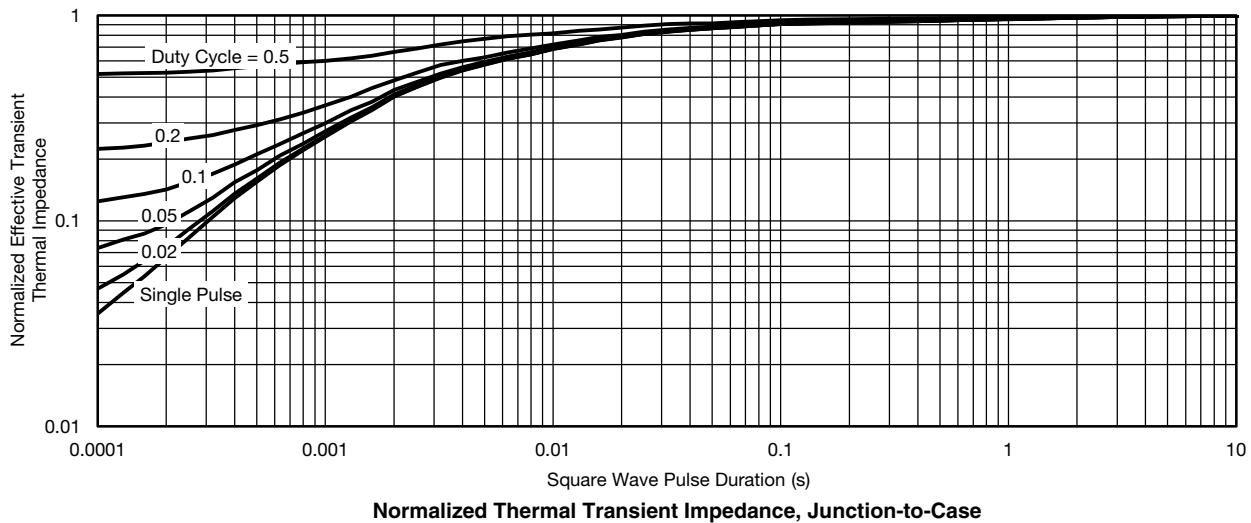
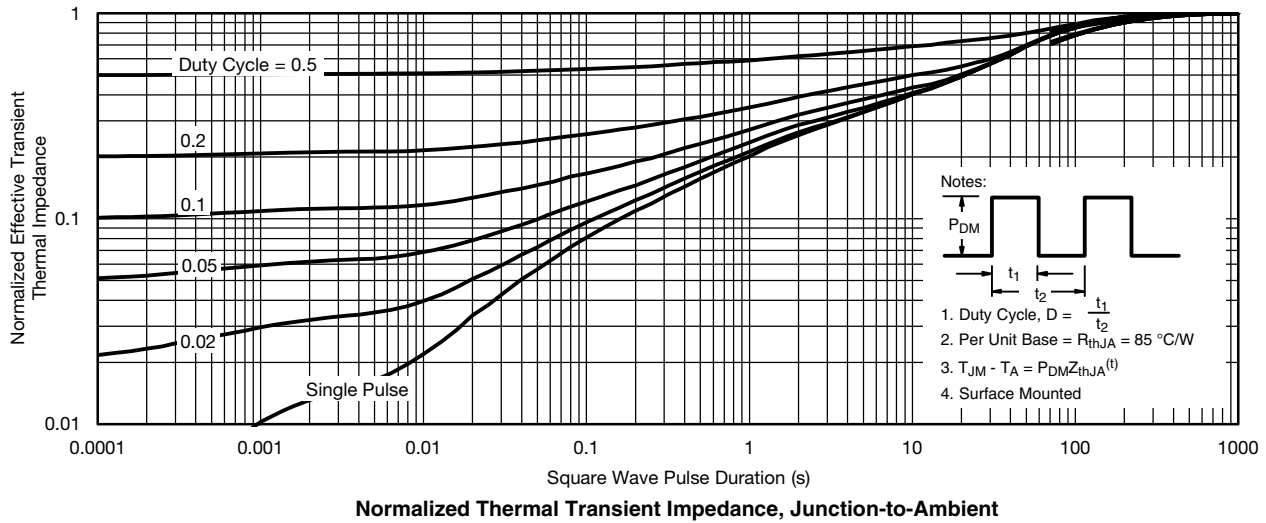
* The power dissipation P_D is based on T_{J(max.)} = 150 °C, using junction-to-case thermal resistance, and is more useful in settling the upper dissipation limit for cases where additional heatsinking is used. It is used to determine the current rating, when this rating falls below the package limit.

Si7252DP

Vishay Siliconix



TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



Vishay Siliconix maintains worldwide manufacturing capability. Products may be manufactured at one of several qualified locations. Reliability data for Silicon Technology and Package Reliability represent a composite of all qualified locations. For related documents such as package/tape drawings, part marking, and reliability data, see www.vishay.com/ppg?62634.

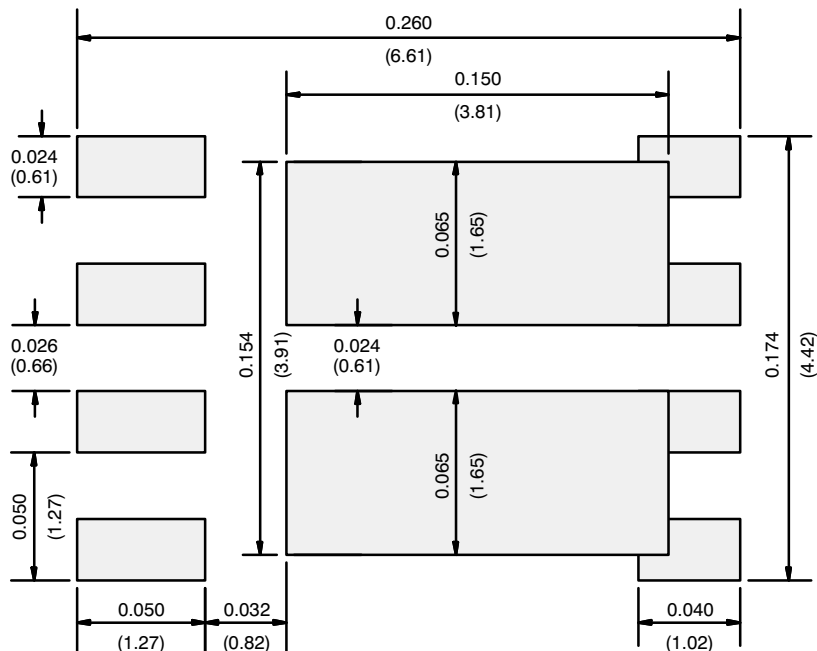
PowerPAK[®] SO-8, (Single/Dual)



- Notes**
1. Inch will govern.
 2. Dimensions exclusive of mold gate burrs.
 3. Dimensions exclusive of mold flash and cutting burrs.

DIM.	MILLIMETERS			INCHES		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A	0.97	1.04	1.12	0.038	0.041	0.044
A1		-	0.05	0	-	0.002
b	0.33	0.41	0.51	0.013	0.016	0.020
c	0.23	0.28	0.33	0.009	0.011	0.013
D	5.05	5.15	5.26	0.199	0.203	0.207
D1	4.80	4.90	5.00	0.189	0.193	0.197
D2	3.56	3.76	3.91	0.140	0.148	0.154
D3	1.32	1.50	1.68	0.052	0.059	0.066
D4	0.57 typ.			0.0225 typ.		
D5	3.98 typ.			0.157 typ.		
E	6.05	6.15	6.25	0.238	0.242	0.246
E1	5.79	5.89	5.99	0.228	0.232	0.236
E2 (for AL product)	3.30	3.48	3.66	0.130	0.137	0.144
E2 (for other product)	3.48	3.66	3.84	0.137	0.144	0.151
E3	3.68	3.78	3.91	0.145	0.149	0.154
E4 (for AL product)	0.58 typ.			0.023 typ.		
E4 (for other product)	0.75 typ.			0.030 typ.		
e	1.27 BSC			0.050 BSC		
K (for AL product)	1.45 typ.			0.057 typ.		
K (for other product)	1.27 typ.			0.050 typ.		
K1	0.56	-	-	0.022	-	-
H	0.51	0.61	0.71	0.020	0.024	0.028
L	0.51	0.61	0.71	0.020	0.024	0.028
L1	0.06	0.13	0.20	0.002	0.005	0.008
θ	0°	-	12°	0°	-	12°
W	0.15	0.25	0.36	0.006	0.010	0.014
M	0.125 typ.			0.005 typ.		
ECN: C13-0702-Rev. K, 20-May-13						
DWG: 5881						

RECOMMENDED MINIMUM PADS FOR PowerPAK® SO-8 Dual



Recommended Minimum Pads
Dimensions in Inches/(mm)

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