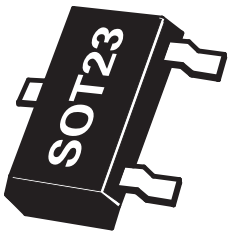
ZLLS500

40V SILICON HIGH CURRENT LOW LEAKAGE SCHOTTKY DIODE

SUMMARY

Schottky Diode V_R = 40V; I_F = 0.7A; I_R = 10μA



DESCRIPTION

This compact SOT23 packaged Schottky diode offers users an excellent performance combination comprising high current operation, extremely low leakage and low forward voltage ensuring suitability for applications requiring efficient operation at higher temperatures (above 85°C) see Operational efficiency chart on page 4.

Key benefits:

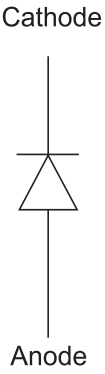
Performance capability equivalent to much larger packages

Improved circuit efficiency & power levels

PCB area savings

FEATURES

- Extremely low leakage (10μA @30V)
- High current capability (I_F = 0.7A)
- Low V_F, fast switching Schottky
- SOT23 package
- ZLLS500 complements low temperature equivalent ZHCS500
- Package thermally rated to 150°C

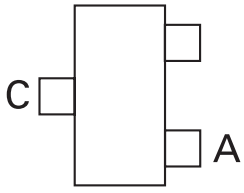


APPLICATIONS

- DC - DC converters
- Strobes
- Mobile phones
- Charging circuits
- Motor control

ORDERING INFORMATION

DEVICE	REEL (inches)	TAPE WIDTH (mm)	QUANTITY PER REEL
ZLLS500TA	7	8mm embossed	3000 units
ZLLS500TC	13	8mm embossed	10000 units



Top view

DEVICE MARKING

L05

ZLLS500

ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	VALUE	UNIT
Schottky Diode				
Continuous reverse voltage		V_R	40	V
Forward current		I_F	0.7	A
Peak repetitive forward current Rectangular pulse duty cycle		I_{FPK}	1.14	A
Non repetitive forward current	t=≤100μs	I_{FSM}	13	A
	t=≤10ms		3.2	A
Package				
Power dissipation at T_{amb}=25°C single die continuous		P_D	500	mW
single die measured at t<5 secs			630	mW
Storage temperature range		T_{stg}	-55 to +150	°C
Junction temperature		T_j	150	°C

THERMAL RESISTANCE

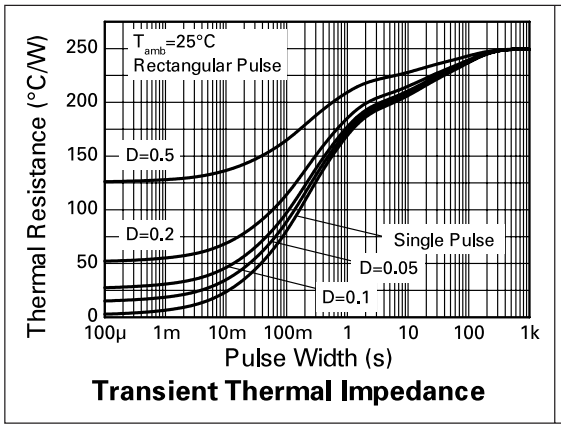
PARAMETER	SYMBOL	VALUE	UNIT
Junction to ambient (a)	$R_{\theta JA}$	250	°C/W
Junction to ambient (b)	$R_{\theta JA}$	198	°C/W

Notes

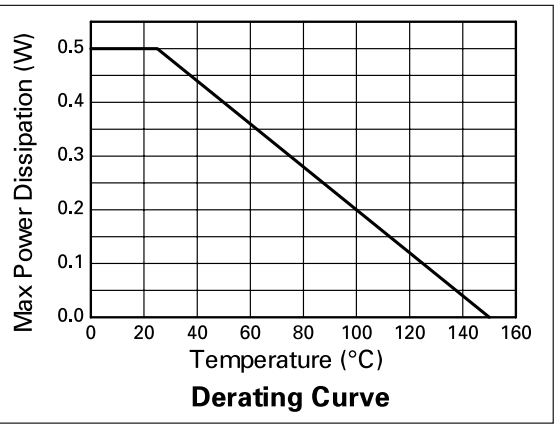
(a) For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

(b) For a device surface mounted on FR4 PCB measured at t<5secs.

TYPICAL CHARACTERISTICS



Transient Thermal Impedance



Derating Curve

ZLLS500

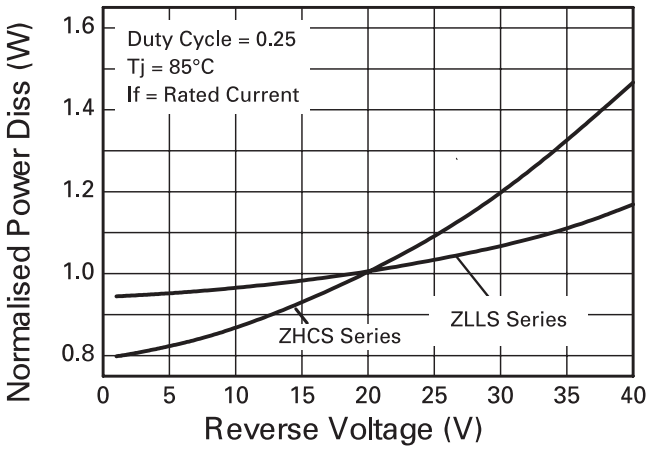
ELECTRICAL CHARACTERISTICS (at Tamb = 25°C unless otherwise stated)

SCHOTTKY DIODE CHARACTERISTICS						
PARAMETER	**SYMBOL**	**MIN.**	**TYP.**	**MAX.**	**UNIT**	**CONDITIONS**
Reverse breakdown voltage	$V_{(BR)R}$	40			V	I_R=200µA
Forward voltage	V_F		305	360	mV	I_F=50 mA*
			335	390	mV	I_F=100 mA*
			395	450	mV	I_F=250mA*
			465	530	mV	I_F=500mA*
			550	630	mV	I_F=750mA*
			620	710	mV	I_F=1A*
			710	800	mV	I_F=1.5A*
			415		mV	I_F=500mA*,Ta = 100°C
Reverse current	I_R		6	10	µA	V_R=30V
			370		µA	V_R=30V,Ta = 85°C
Diode capacitance	C_D		16		pF	f=1MHz,V_R=30V
Reverse recovery time	t_{rr}		3		ns	Switched from I_F = 500mA to V_R = 5.5V Measured @ I_R 50mA. di /d t = 500mA/ ns. Rsource = 6Ω;Rload= 10Ω
Reverse recovery charge	Q_{rr}		210		pC	

*Measured under pulsed conditions. Pulse width = 300µS. Duty cycle ⩽ 2%.

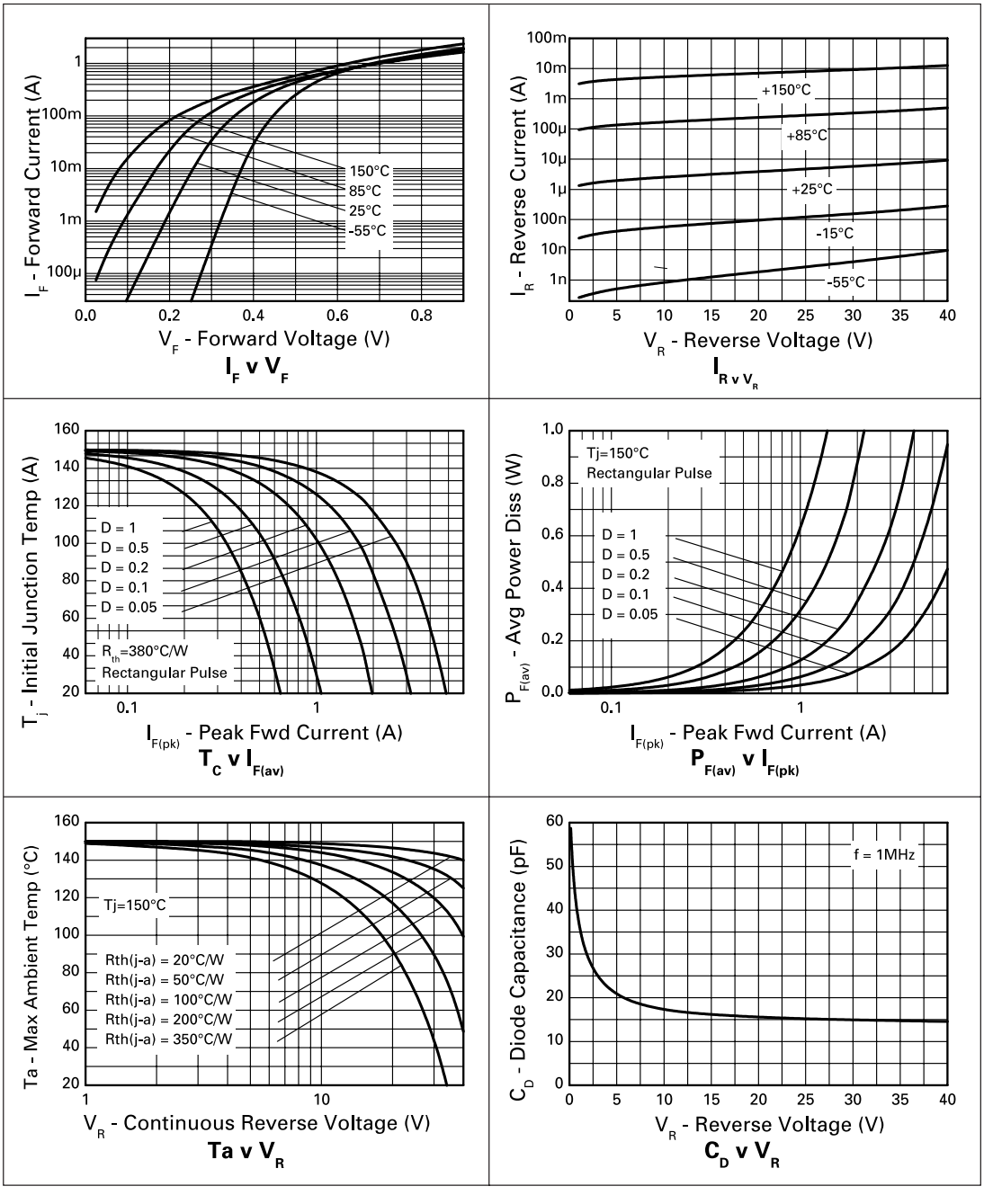
Operational efficiency chart

The operational efficiency chart indicates the beneficial use of the ZLLS series diodes in applications requiring higher voltage, higher temperature operation. Circuits requiring low voltage low temperature operation will benefit from using Zetex low V_F ZHCS series diodes.



Operational Efficiency Example

TYPICAL CHARACTERISTICS



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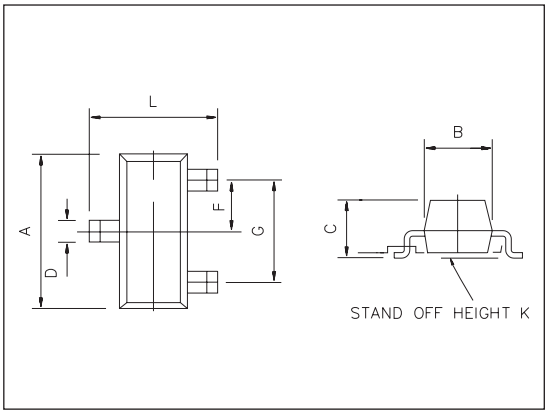
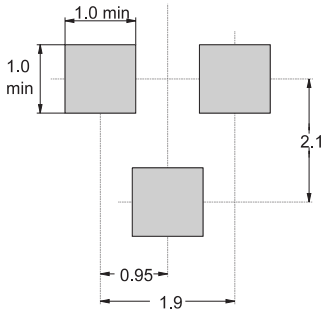
Package Outline



Pad Layout



SOT23 pattern.
Minimum Pad Size (dimensions in mm)

Package Dimensions

DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	2.67	3.05	0.105	0.120
B	1.20	1.40	0.047	0.055
C	–	1.10	–	0.043
D	0.37	0.53	0.0145	0.021
F	0.085	0.15	0.0033	0.0059
G	NOM 1.9		NOM 0.075	
K	0.01	0.10	0.0004	0.004
L	2.10	2.50	0.0825	0.0985
N	NOM 0.95		NOM 0.037	

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