

# ZLLS500

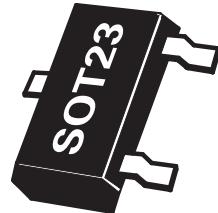
## 40V SILICON HIGH CURRENT LOW LEAKAGE SCHOTTKY DIODE

### SUMMARY

Schottky Diode  $V_R = 40V$ ;  $I_F = 0.7A$ ;  $I_R = 10\mu A$

### 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 ( $10\mu A$  @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

Cathode



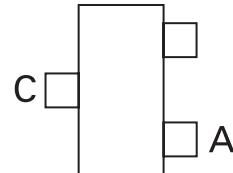
Anode

### 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

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## ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	VALUE	UNIT
<b>Schottky Diode</b>			
Continuous reverse voltage	$V_R$	40	V
Forward current	$I_F$	0.7	A
Peak repetitive forward current	$I_{FPK}$	1.14	A
Rectangular pulse duty cycle			
Non repetitive forward current $t \leq 100\mu s$	$I_{FSM}$	13	A
$t \leq 10ms$		3.2	A
<b>Package</b>			
Power dissipation at $T_{amb}=25^\circ C$ 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

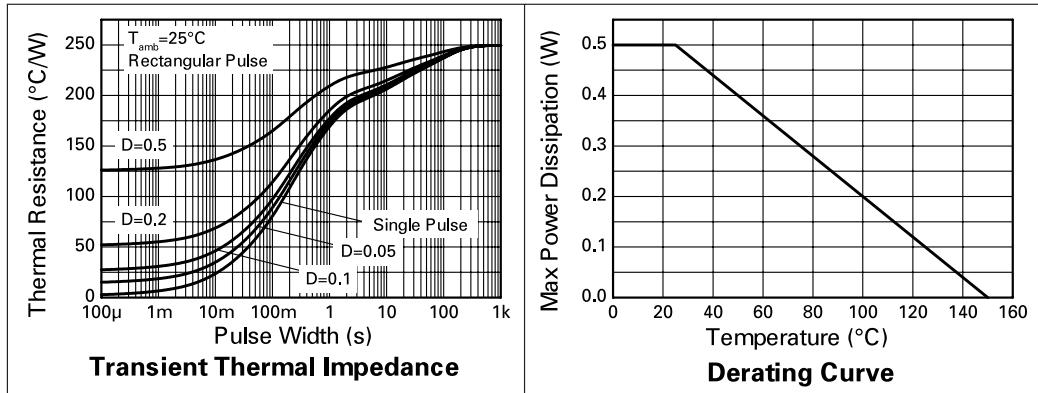
- (a) For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.
- (b) For a device surface mounted on FR4 PCB measured at  $t < 5$  secs.



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## TYPICAL CHARACTERISTICS



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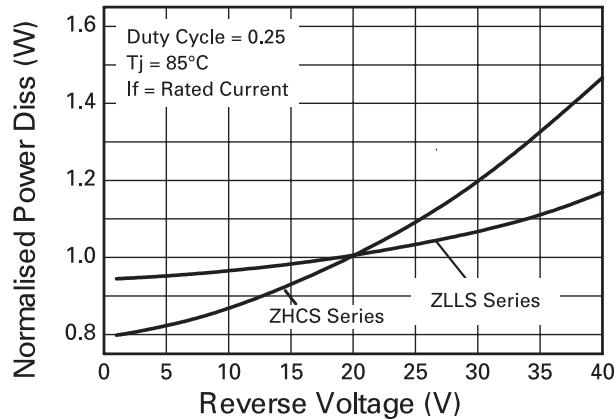
## ELECTRICAL CHARACTERISTICS (at Tamb = 25°C unless otherwise stated)

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

\*Measured under pulsed conditions. Pulse width = 300 $\mu\text{S}$ . Duty cycle  $\leq 2\%$ .

### 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.



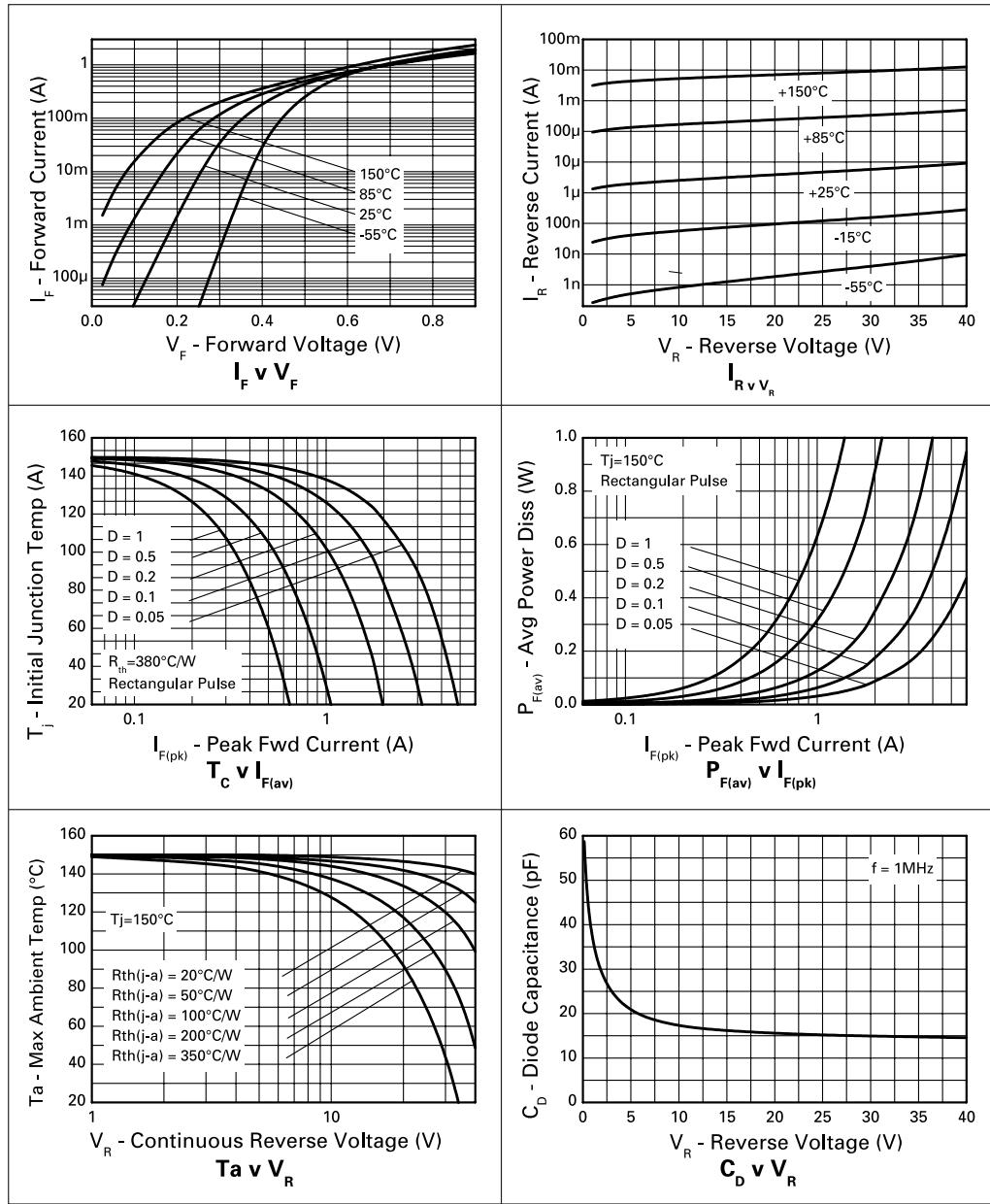
### Operational Efficiency Example



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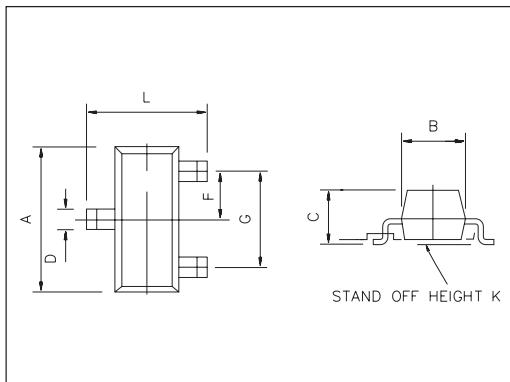
## TYPICAL CHARACTERISTICS



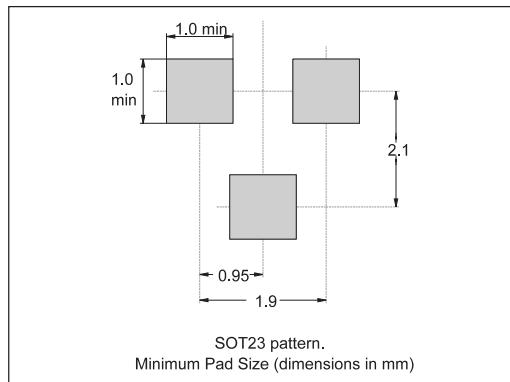
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# ZLLS500

## Package Outline



## Pad Layout



## 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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