

ZXSDS2M832

MPPS™ Miniature Package Power Solutions DUAL 60V, 1.65A SCHOTTKY DIODE COMBINATION

SUMMARY

Schottky Diode - $V_R = 60V$; $V_F = 600mV(@1A)$; $I_C=1.65A$

DESCRIPTION

Packaged in the new innovative 3x2 MLP (Micro Leaded Package) outline, this combination dual comprises two 60V 0.9A Schottky barrier diodes. This excellent combination provides users with highly efficient performance in applications including DC-DC converters and charging circuits.

Additionally users gain several other key benefits:

- Performance capability equivalent to much larger packages
- Improved circuit efficiency & power levels
- PCB area and device placement savings
- Lower Package Height (0.9mm nom)
- Reduced component count

FEATURES

- Extremely Low V_F , fast switching Schottky
- $I_F= 1.65A$ Continuous Forward Current
- 3mm x 2mm MLP

APPLICATIONS

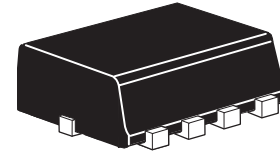
- DC-DC Converters
- DC-DC Modules
- Mosfet gate drive circuits
- Charging circuits
- Mobile Phones
- Motor Control

ORDERING INFORMATION

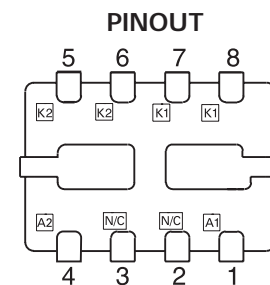
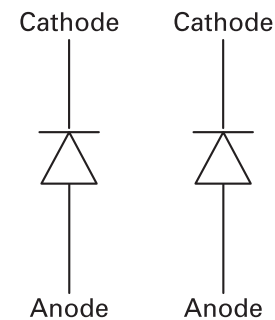
DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZXSDS2M832TA	7"	8mm	3000 units
ZXSDS2M832TC	13"	8mm	10000 units

DEVICE MARKING

- DS2



MLP832



Bottom View

ISSUE 2 June 2003



ZXSDS2M832

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	LIMIT	UNIT
Reverse Voltage	V_R	60	V
Forward Voltage @ $I_F = 1000\text{mA}$	V_F	600	mV
Forward Current	I_F	1.65	A
Average Forward Current $D=50\%$, $t \leq 300\mu\text{s}$	I_{FAV}	1.24	A
Non Repetitive Forward Current $t \leq 100\mu\text{s}$	I_{FSM}	16.8	A
Non Repetitive Forward Current $t \leq 10\text{ms}$		5.63	A
Power Dissipation at $T_A=25^\circ\text{C}$ (a)(f)	P_D	1.2	W
Linear Derating Factor		12	$\text{mW}/^\circ\text{C}$
Power Dissipation at $T_A=25^\circ\text{C}$ (b)(f)	P_D	2	W
Linear Derating Factor		20	$\text{mW}/^\circ\text{C}$
Power Dissipation at $T_A=25^\circ\text{C}$ (c)(f)	P_D	0.8	W
Linear Derating Factor		8	$\text{mW}/^\circ\text{C}$
Power Dissipation at $T_A=25^\circ\text{C}$ (d)(f)	P_D	0.9	W
Linear Derating Factor		9	$\text{mW}/^\circ\text{C}$
Power Dissipation at $T_A=25^\circ\text{C}$ (d)(g)	P_D	1.36	W
Linear Derating Factor		13.6	$\text{mW}/^\circ\text{C}$
Power Dissipation at $T_A=25^\circ\text{C}$ (e)(g)	P_D	2.4	W
Linear Derating Factor		24	$\text{mW}/^\circ\text{C}$
Storage Temp, Range	T_{stg}	-55 to +150	$^\circ\text{C}$
Operating & Storage Temp, Range	T_j	-55 to +125	$^\circ\text{C}$

THERMAL RESISTANCE

PARAMETER	SYMBOL	VALUE	UNIT
Junction to Ambient (a)(f)	$R_{\theta JA}$	83.3	$^\circ\text{C}/\text{W}$
Junction to Ambient (b)(f)	$R_{\theta JA}$	51	$^\circ\text{C}/\text{W}$
Junction to Ambient (c)(f)	$R_{\theta JA}$	125	$^\circ\text{C}/\text{W}$
Junction to Ambient (d)(f)	$R_{\theta JA}$	111	$^\circ\text{C}/\text{W}$
Junction to Ambient (d)(g)	$R_{\theta JA}$	73.5	$^\circ\text{C}/\text{W}$
Junction to Ambient (e)(g)	$R_{\theta JA}$	41.7	$^\circ\text{C}/\text{W}$

NOTES

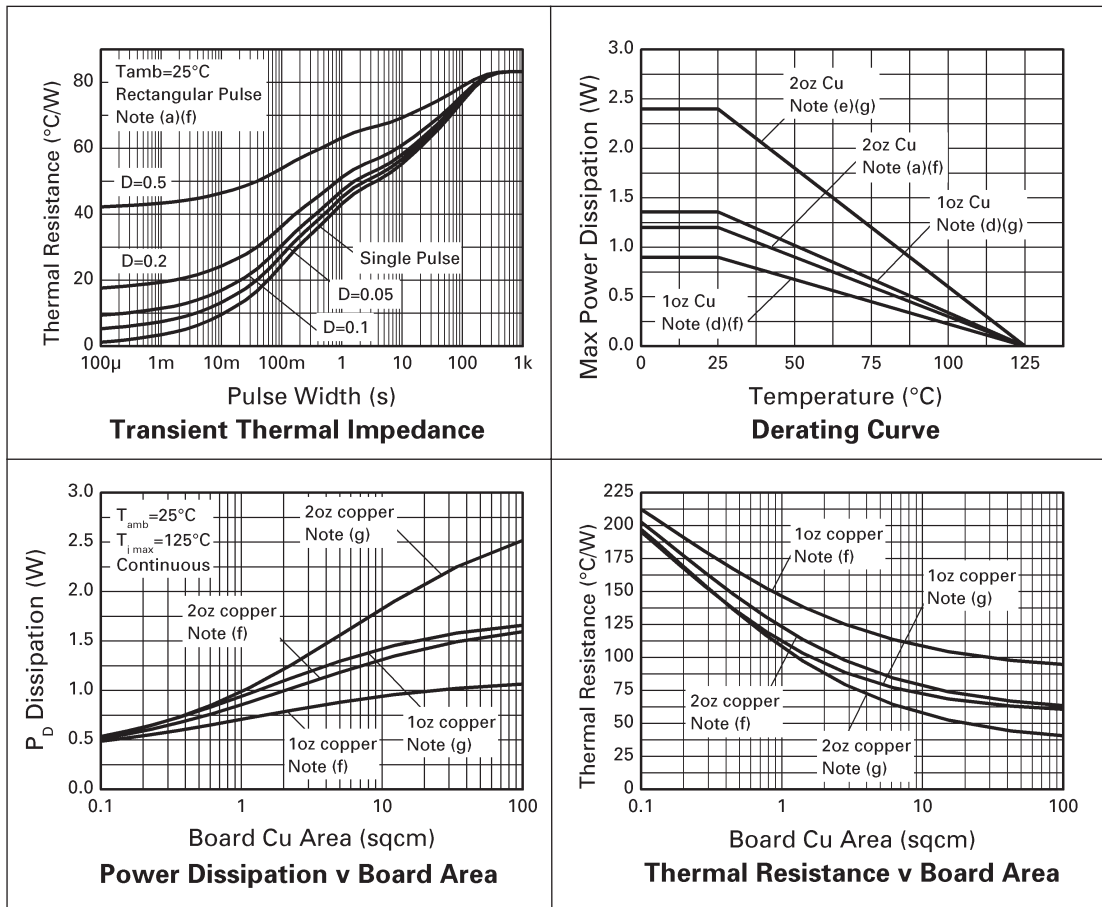
- For a dual device surface mounted on 8 sq. cm single sided 2oz copper on FR4 PCB, in still air conditions **with all exposed pads attached**. The copper area is split down the center line into two separate areas with one half connected to each half of the dual device.
- Measured at $t \leq 5$ secs for a dual device surface mounted on 8 sq cm single sided 2oz copper on FR4 PCB, in still air conditions **with all exposed pads attached**. The copper area is split down the centerline into two separate areas with one half connected to each half of the dual device.
- For a dual device surface mounted on 8 sq cm single sided 2oz copper FR4 PCB, in still air conditions **with minimal lead connections only**.
- For a dual device surface mounted on 10 sq cm single sided 1oz copper FR4 PCB, in still air conditions **with all exposed pads attached**. The copper area is split down the centerline into two separate areas with one half connected to each half of the dual device.
- For a dual device surface mounted on 85 sq cm single sided 2oz copper FR4 PCB, in still air conditions **with all exposed pads attached**. The copper area is split down the centerline into two separate areas with one half connected to each half of the dual device.
- For dual device with one active die.
- For dual device with 2 active die running at equal power.
- Repetitive rating - pulse width limited by max junction temperature. Refer to Transient Thermal Impedance graph.
- The minimum copper dimensions required for mounting are no smaller than the exposed metal pads on the base of the device as shown in the package dimensions data. The thermal resistance for a dual device mounted on 1.5mm thick FR4 board using minimum copper of 1 oz weight, 1mm wide tracks and one half of the device active is $R_{\theta h} = 250^\circ\text{C}/\text{W}$ giving a power rating of $P_{tot} = 400\text{mW}$.



ISSUE 2 June 2003

ZXSDS2M832

TYPICAL CHARACTERISTICS



ISSUE 2 June 2003

ZXSDS2M832

ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

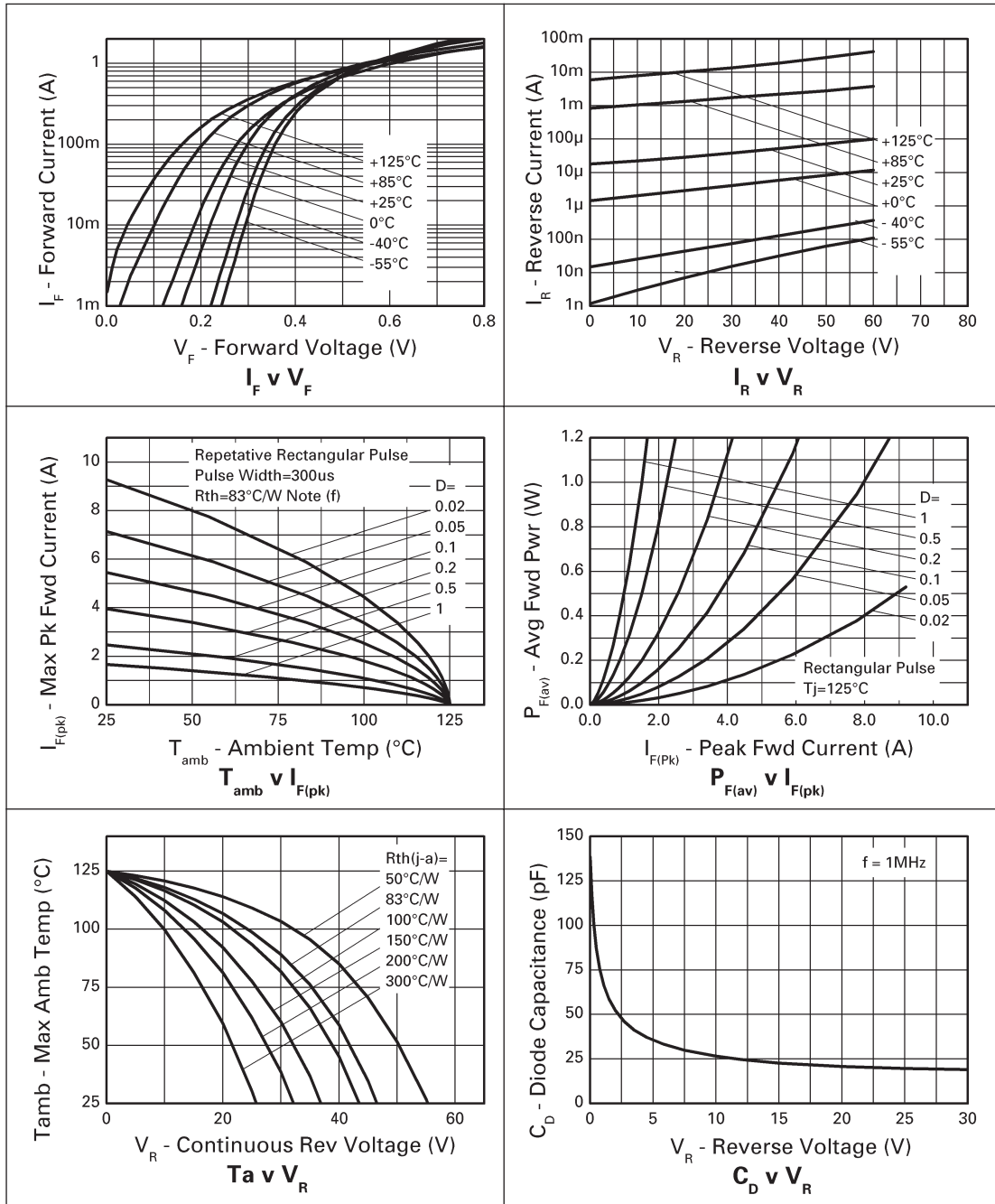
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS
STATIC						
Reverse Breakdown Voltage	$V_{(BR)R}$	60	80		V	$I_R = 300\mu\text{A}^*$
Forward Voltage	V_F		245	280	mV	$I_F = 50\text{mA}^*$
			275	320	mV	$I_F = 100\text{mA}^*$
			330	390	mV	$I_F = 250\text{mA}^*$
			395	470	mV	$I_F = 500\text{mA}^*$
			455	530	mV	$I_F = 750\text{mA}^*$
			510	600	mV	$I_F = 1000\text{mA}^*$
			620	740	mV	$I_F = 1500\text{mA}^*$
			500	-	mV	$I_F = 1000\text{mA}^*, T_A = 100^{\circ}\text{C}$
Reverse Current	I_R		50	100	μA	$V_R = 45\text{V}$
Diode Capacitance	C_D		17		pF	$f = 1\text{MHz}, V_R = 25\text{V}$
Reverse Recovery Time	t_{rr}		12		ns	Switched from $I_F = 500\text{mA}$ to $I_R = 500\text{mA}$ Measured at $I_R = 50\text{mA}$

NOTES

* Measured under pulsed conditions

ZXSDS2M832

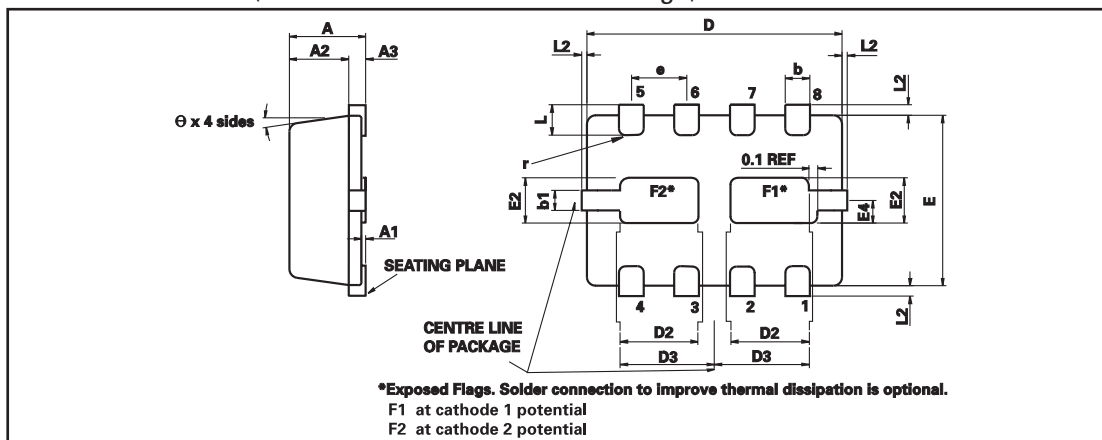
TYPICAL CHARACTERISTICS



ISSUE 2 June 2003

ZXSDS2M832

PACKAGE OUTLINE (3mm x 2mm Micro Leaded Package)



Controlling dimensions are in millimetres. Approximate conversions are given in inches

PACKAGE DIMENSIONS

DIM	Millimetres		Inches		DIM	Millimetres		Inches	
	Min	Max	Min	Max		Min	Max	Min	Max
A	0.80	1.00	0.031	0.039	e	0.65 REF		0.0256 BSC	
A1	0.00	0.05	0.00	0.002	E	2.00 BSC		0.0787 BSC	
A2	0.65	0.75	0.0255	0.0295	E2	0.43	0.63	0.017	0.0249
A3	0.15	0.25	0.006	0.0098	E4	0.16	0.36	0.006	0.014
b	0.24	0.34	0.009	0.013	L	0.20	0.45	0.0078	0.0157
b1	0.17	0.30	0.0066	0.0118	L2	-	0.125	0.00	0.005
D	3.00 BSC		0.118 BSC		r	0.075 BSC		0.0029 BSC	
D2	0.82	1.02	0.032	0.040	θ	0°	12°	0°	12°
D3	1.01	1.21	0.0397	0.0476	-	-	-	-	-

© Zetex plc 2003

Europe

Zetex plc
Fields New Road
Chadderton
Oldham, OL9 8NP
United Kingdom
Telephone (44) 161 622 4444
Fax: (44) 161 622 4446
hq@zetex.com

Zetex GmbH
Streitfeldstraße 19
D-81673 München
Germany
Telefon: (49) 89 45 49 49 0
Fax: (49) 89 45 49 49 49
europe.sales@zetex.com

Americas

Zetex Inc
700 Veterans Memorial Hwy
Hauppauge, NY 11788
USA
Telephone: (1) 631 360 2222
Fax: (1) 631 360 8222
usa.sales@zetex.com

Asia Pacific

Zetex (Asia) Ltd
3701-04 Metroplaza Tower 1
Hing Fong Road
Kwai Fong
Hong Kong
Telephone: (852) 26100 611
Fax: (852) 24250 494
asia.sales@zetex.com

These offices are supported by agents and distributors in major countries world-wide.

This publication is issued to provide outline information only which (unless agreed by the Company in writing) may not be used, applied or reproduced for any purpose or form part of any order or contract or be regarded as a representation relating to the products or services concerned. The Company reserves the right to alter without notice the specification, design, price or conditions of supply of any product or service.

For the latest product information, log on to www.zetex.com



ISSUE 2 June 2003