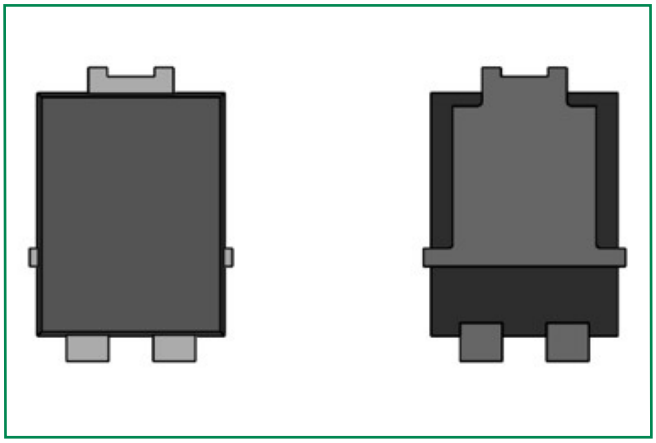
Littelfuse
Expertise Applied | Answers Delivered

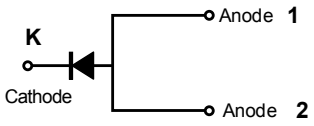
Schottky Barrier Rectifier
DST1045S, 10A, 45V, TO-277B, Single

DST1045S

HF RoHS Pb e3



Pin out



Description

Littelfuse DST series Ultra Low V_F Schottky Barrier Rectifier is designed to meet the general requirements of commercial and industry applications by providing high temperature, low leakage and lower V_F products.

It is suitable for high frequency switching mode power supply, free-wheeling diodes and polarity protection diodes.

Features

- Ultra low forward voltage drop
- High frequency operation
- MSL: Level 1 - unlimited
- High junction temperature capability
- Trench MOS Schottky technology
- Single die in TO-277B Package
- Pb-free E3 means 2nd level interconnect is Pb-free and the terminal finish material is tin(Sn) (IPC/ JEDEC J-STD-609A.01)

Applications

- Switching mode power supply
- DC/DC converters
- Free-Wheeling diodes
- Polarity Protection Diodes

Maximum Ratings

Parameters	Symbol	Test Conditions	Max	Unit
Peak Inverse Voltage	V_{RWM}	-	45	V
Average Forward Current *	$I_{F(AV)}$	50% duty cycle @T_L = 125 °C rectangular wave form	10	A
Peak One Cycle Non-Repetitive Surge Current	I_{FSM}	8.3 ms, half Sine pulse	150	A

* Mounted on 30 mm x 30 mm pad areas aluminum PCB

Electrical Characteristics

Parameters	Symbol	Test Conditions	Typ	Max	Unit
Forward Voltage Drop *	V_{F1}	@5A, Pulse, T_J = 25 °C	0.43	0.51	V
		@10A, Pulse, T_J = 25 °C	0.49	0.57	
	V_{F2}	@5A, Pulse, T_J = 125 °C	0.32	0.43	
		@10A, Pulse, T_J = 125 °C	0.41	0.50	
Reverse Current *	I_{R1}	@V_R = rated V_R, T_J = 25 °C	0.017	0.80	mA
	I_{R2}	@V_R = rated V_R, T_J = 125 °C	15	100	
Junction Capacitance	C_T	@V_R = 5V, T_C = 25 °C, f_{SIG} = 1MHz	656	-	pF

* Pulse Width < 300µs, Duty Cycle <2%

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Thermal-Mechanical Specifications

Parameters	Symbol	Test Conditions	Max	Unit
Junction Temperature	T_J		-55 to +150	°C
Storage Temperature	T_{stg}		-55 to +150	°C
Thermal Resistance Junction to Ambient	R_{thJA}	DC operation	75	°C/W
Typical Thermal Resistance Junction to Lead	R_{thJL}*	DC operation	3.5	°C/W
Approximate Weight	wt		0.08	g
Case Style	TO-277B			

(1) Free air, mounted on recommended copper pad area; thermal resistance R_{thJA} - junction to ambient
(2) Mounted on 30 mm x 30 mm pad areas aluminum PCB; thermal resistance R_{thJl} - junction to lead
*Lead temperature monitored at the cathode pin

Figure 1: Forward Current Derating Curve

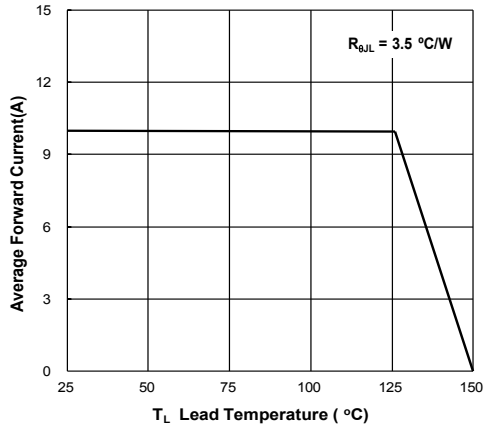

Figure 2: Forward Power Loss Characteristics

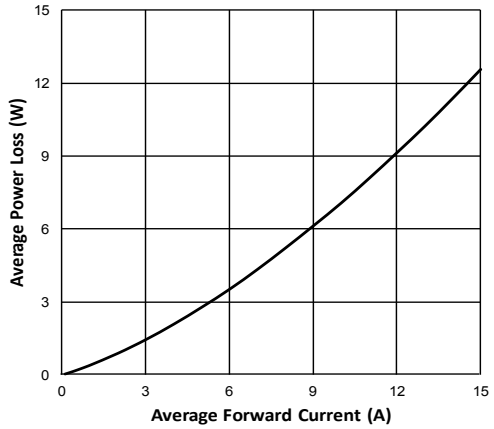

Figure 3: Typical Junction Capacitance

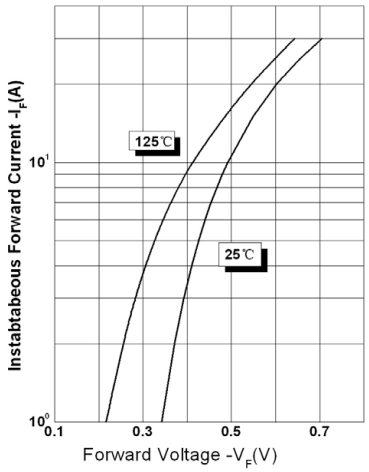

Figure 4: Typical Reverse Characteristics

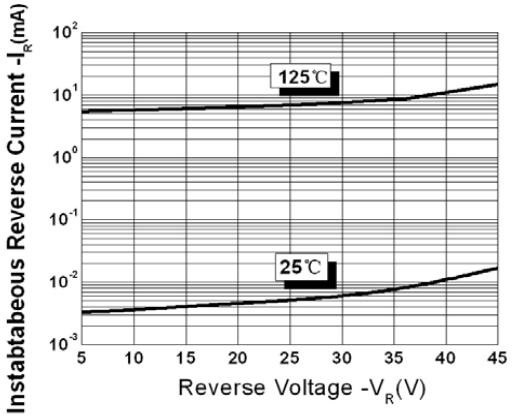

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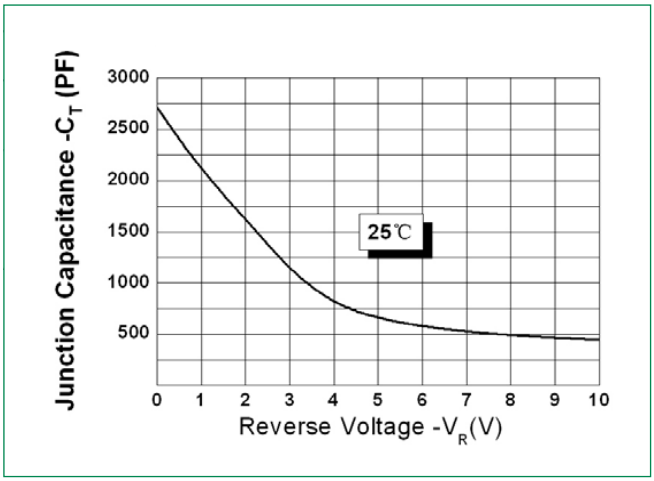
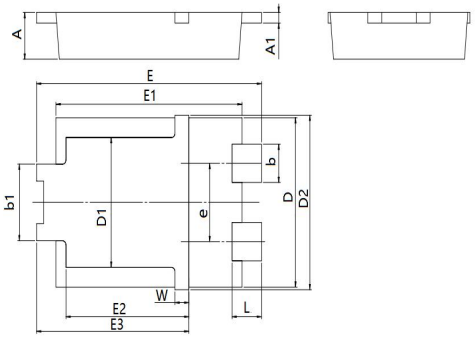
Figure 5: Typical Instantaneous Forward Voltage Characteristics

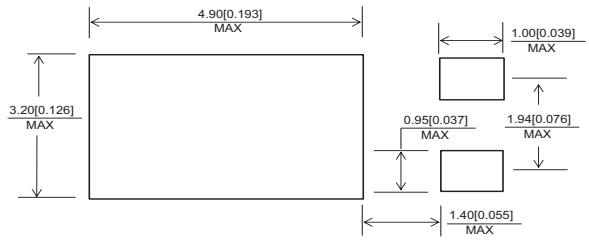


Dimensions-TO-277B

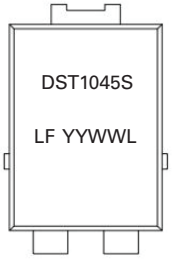


Symbol	Millimeters		Inches	
	Min	Max	Min.	Max.
A	0.95	1.25	0.037	0.049
A1	0.20	0.30	0.008	0.012
b	0.85	0.95	0.033	0.037
b1	1.70	1.90	0.067	0.075
D	3.88	4.08	0.153	0.161
D1	2.90	3.20	0.114	0.126
D2	4.25	–	0.167	–
e	1.74	1.94	0.069	0.076
E	6.30	6.70	0.248	0.264
E1	5.28	5.48	0.208	0.216
E2	3.40	3.70	0.134	0.146
E3	4.20	4.60	0.165	0.181
L	0.65	1.05	0.025	0.041
W	0.25	0.55	0.010	0.022

Mounting Pad Layout



Part Numbering and Marking System



DST	= Device Type
10	= Forward Current (10 A)
45	= Reverse Voltage (45 V)
S	= Package Type
LF	= Littelfuse
YY	= Year
WW	= Week
L	= Lot Number

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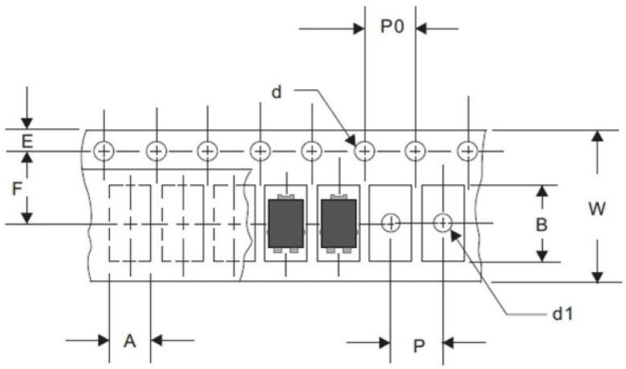
Packing Options

Part Number	Marking	Packing Mode	M.O.Q
DST1045S	DST1045S	5000pcs / Reel	20000

Carrier Tape & Reel Specification



Symbol	Millimeters		Inches	
	Min	Max	Min.	Max.
A	4.28	4.48	0.168	0.176
B	6.80	7.00	0.268	0.275
d	1.40	1.60	0.055	0.063
d1	–	1.50	–	0.059
E	1.65	1.85	0.065	0.073
F	5.40	5.60	0.212	0.220
P	7.90	8.10	0.311	0.319
P0	3.90	4.10	0.153	0.161
W	11.70	12.30	0.461	0.484

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