Littelfuse
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SIDACtor® Protection Thyristors
High Surge Current Protection

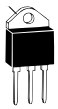
Surge Ratings

Series	I_{PP}			I_{TSM} 50 / 60 Hz	di/dt
	1.2/50[1] 8/20[2]	10/350[1] 1.2/50[2]	10/1000 [1] 10/1000 [2]		
	A min	A min	A min	A min	A/µs max
E	5000[3]	1500	1100	400	630

Notes:
1. Voltage waveform in µs
2. Current waveform in µs
3. For surge rating of P3800MEL, it is minimum 4kA and typical 5kA @8/20µs.

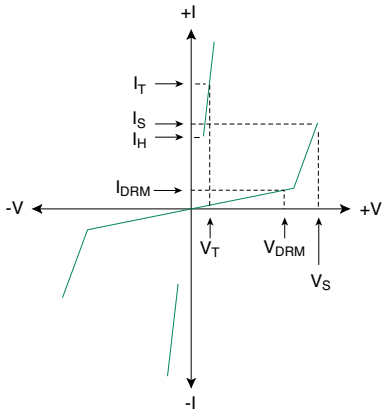
- Peak pulse current rating (I_{PP}) is repetitive and guaranteed for the life of the product.
- The component must initially be in thermal equilibrium with -40°C ≤ T_J ≤ +150°C

Thermal Conditions

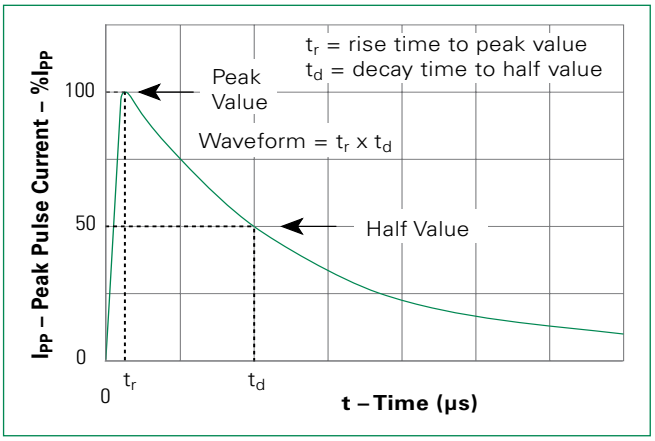
Package	Symbol	Parameter	Value	Unit
TO-218 	$T_{JØ}$	Operating Junction Temperature Range	-40 to +150	°C
	T_S	Storage Temperature Range	-65 to +150	°C
	T_C	Maximum Case Temperature	100	°C
	$R_{\theta JC}$*	Thermal Resistance: Junction to Case	1.7	°C/W
	$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	56	°C/W

*$R_{\theta JC}$ rating assumes the use of a heat sink and on state mode for extended time at 25 A, with average power dissipation of 29.125 W.

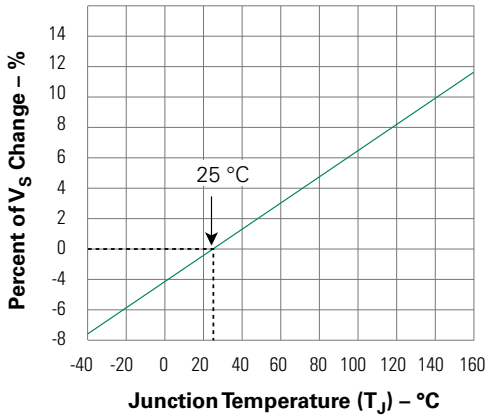
V-I Characteristics



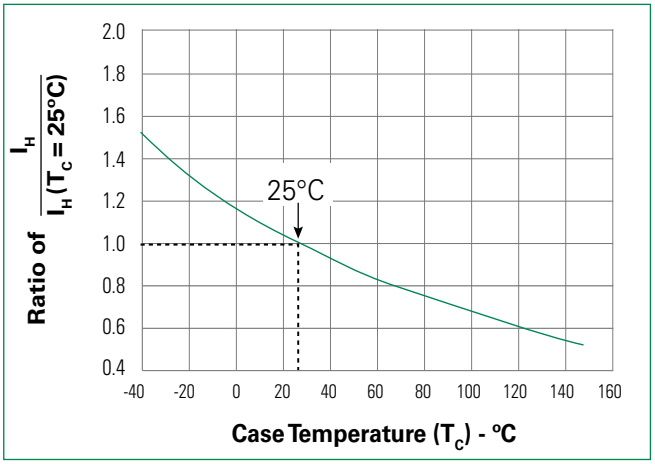
t_r x t_d Pulse Waveform



Normalized V_S Change vs. Junction Temperature



Normalized DC Holding Current vs. Case Temperature



Revised: 11/04/19

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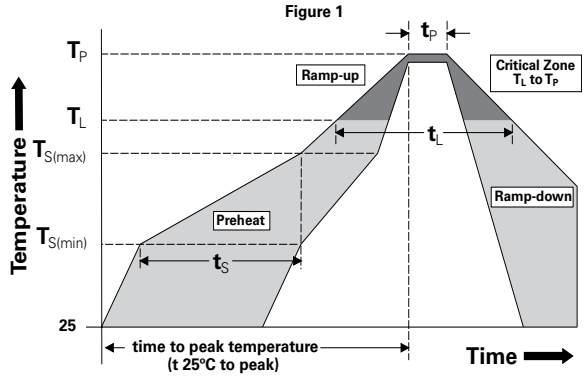
Soldering Parameters

Reflow Condition		Pb-Free assembly
Pre Heat	**- Temperature Min ($T_{s(min)}$)**	+150°C
	- Temperature Max ($T_{s(max)}$)	+200°C
	- Time (Min to Max) (t_s)	60-180 secs.
Average ramp up rate (Liquidus Temp (T_L) to peak)		3°C/sec. Max.
$T_{S(max)}$ to T_L - Ramp-up Rate		3°C/sec. Max.
Reflow	**- Temperature (T_L) (Liquidus)**	+217°C
	- Temperature (t_L)	60-150 secs.
Peak Temp (T_P)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (t_p)		30 secs. Max.
Ramp-down Rate		6°C/sec. Max.
Time 25°C to Peak Temp (T_P)		8 min. Max.
Do not exceed		+260°C

Figure 1



Physical Specifications

Lead Material	Copper Alloy
Terminal Finish	100% Matte-Tin Plated
Body Material	UL recognized epoxy meeting flammability classification V-0

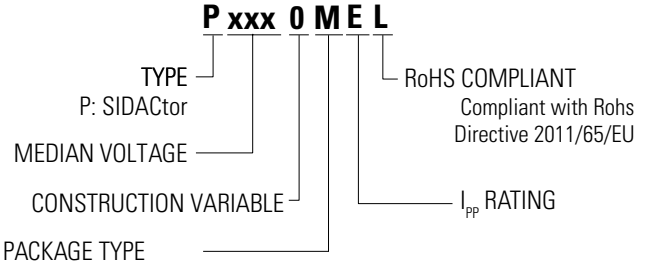
Environmental Specifications

High Temp Voltage Blocking	80% Rated V_{DRM} (V_{AC} Peak) +125°C or +150°C, 504 or 1008 hrs. MIL-STD-750 (Method 1040) JEDEC, JESD22-A-101
Temp Cycling	-65°C to +150°C, 15 min. dwell, 10 up to 100 cycles. MIL-STD-750 (Method 1051) EIA/JEDEC, JESD22-A104
Biased Temp & Humidity	52 V_{DC} (+85°C) 85%RH, 504 up to 1008 hrs. EIA/JEDEC, JESD22-A-101
High Temp Storage	+150°C 1008 hrs. MIL-STD-750 (Method 1031) JEDEC, JESD22-A-101
Low Temp Storage	-65°C, 1008 hrs.
Thermal Shock	0°C to +100°C, 5 min. dwell, 10 sec. transfer, 10 cycles. MIL-STD-750 (Method 1056) JEDEC, JESD22-A-106
Autoclave (Pressure Cooker Test)	+121°C, 100%RH, 2atm, 24 up to 168 hrs. EIA/JEDEC, JESD22-A-102
Resistance to Solder Heat	+260°C, 30 secs. MIL-STD-750 (Method 2031)
Moisture Sensitivity Level	85%RH, +85°C, 168 hrs., 3 reflow cycles (+260°C Peak). JEDEC-J-STD-020, Level 1

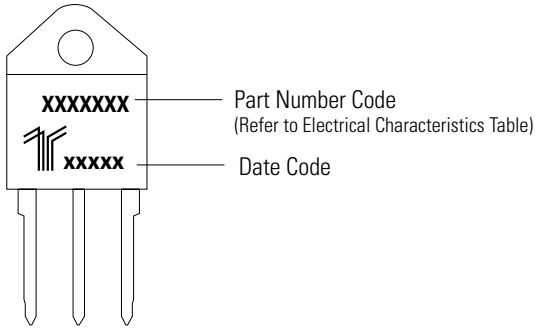
Wave Solder (THD) Parameters and Lead-Free Requirements

Reflow Parameter	Lead-Free Requirement
Prehead (Depending on Flux Only) Temperature Min Temperature Max Time (Min to Max)	 150°C 200°C 60 - 180 Seconds
Solder Pot Temperature	245 - 265°C (Max)
Solder Dwell Time	2 - 3.5 Seconds
Cooling	-6°C/Seconds (Max)

Part Numbering



Part Marking



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SIDACtor® Protection Thyristors
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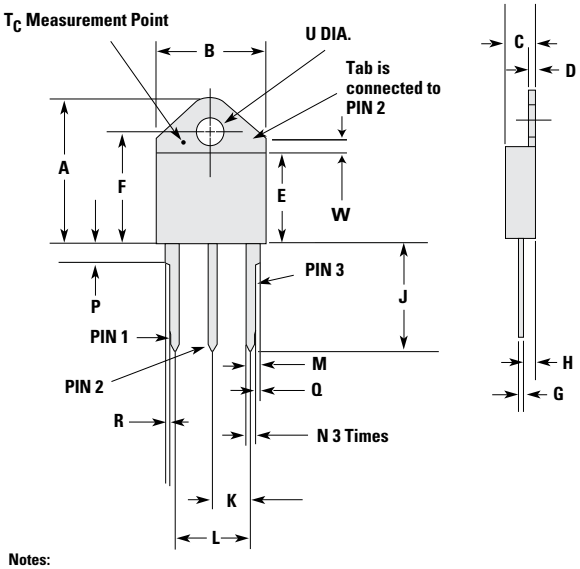
Dimensions — TO-218



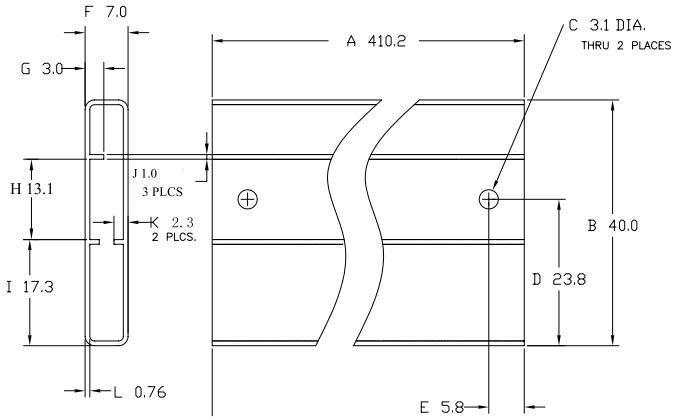
Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.810	0.835	20.57	21.21
B	0.610	0.630	15.49	16.00
C	0.178	0.188	4.52	4.78
D	0.055	0.070	1.40	1.78
E	0.487	0.497	12.37	12.62
F	0.635	0.655	16.13	16.64
G	0.022	0.029	0.56	0.74
H	0.075	0.095	1.91	2.41
J	0.575	0.625	14.61	15.88
K	0.211	0.219	5.36	5.56
L	0.422	0.437	10.72	11.10
M	0.058	0.068	1,47	1.73
N	0.045	0.055	1.14	1.40
P	0.095	0.115	2.41	2.92
R	0.008	0.016	0.20	0.41
U	0.161	0.165	4.1	4.2
W	0.085	0.095	2.17	2.42

Notes:
- Mold flash shall not exceed 0.13 mm per side.
- Maximum torque to be applied to mounting tab is 8 in-lbs. (0.904 Nm).
- Pin 3 has no connection.
- Tab is non-isolated (connects to middle pin).

Packing Options

Package Type	Description	Packing Options Quantity	Added Suffix	Industry Standard
M	TO-218 (ME) Tube Pack	250(25 per tube/10 tubes per box)	N/A	N/A

Tube Pack Specification — TO-218



Mouser Electronics

Authorized Distributor

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