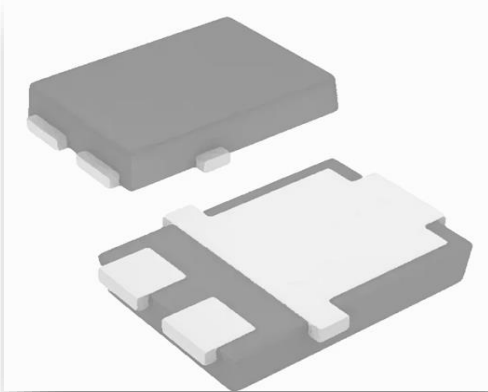


10.0A SURFACE MOUNT TRENCH MOS SCHOTTKY BARRIER RECTIFIERS 40V-100V

DESCRIPTION:



The ALP10L40-T7B thru ALP10L100-T7B is 10.0A Surface Mount Trench MOS Schottky Barrier Rectifiers 40V-100V are low profile package, Ideal for use in low voltage high frequency inverters, freewheeling, DC/DC converters, and polarity protection applications.

FEATURES:

- High current density Schottky
- Low forward voltage drop
- Excellent high temperature stability
- High forward surge current capability
- Lead Free finish, RoHS compliant
- Suffix "-H" indicates Halogen free parts, ex. ALP10L40-T7B-H

APPLICATIONS:

- Low voltage high frequency inverters
- Freewheeling
- DC/DC converters
- Polarity protection

MECHANICAL CHARACTERISTICS

- Epoxy: UL94-V0 rated flame retardant.
- Case: Molded plastic, TO-277B
- Terminals: Plated terminals, Solderable per MIL-STD-750, Method 2026
- Polarity: Color band denotes cathode except bi-directional models
- Mounting Position: Any.
- Approximate Weight: 0.092 grams.

TYPICAL DEVICE CHARACTERISTICS

MAXIMUM RATINGS ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)								
PARAMETER	SYMBOL	ALP10L40-T7B	ALP10L45-T7B	ALP10L50-T7B	ALP10L60-T7B	ALP10L80-T7B	ALP10L100-T7B	UNITS
Maximum repetitive peak reverse voltage	V_{RRM}	40	45	50	60	80	100	Volts
Maximum RMS voltage	V_{RMS}	28	31.5	35	42	56	70	Volts
Maximum continuous reverse voltage	V_R	40	45	50	60	80	100	Volts
Maximum average forward rectified current	I_O	10						Amps
Non-repetitive Peak forward surge current 8.3 ms single half sine-wave (JEDEC Method)	I_{FSM}	175						Amps
Operating junction temperature range	T_J	-55 to +150						$^{\circ}\text{C}$
Storage temperature range	T_{STG}	-55 to +150						$^{\circ}\text{C}$

ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)									
PARAMETER	TEST CONDITIONS	SYMBOL	ALP10L40-T7B	ALP10L45-T7B	ALP10L50-T7B	ALP10L60-T7B	ALP10L80-T7B	ALP10L100-T7B	UNIT
Maximum instantaneous forward voltage	$I_F = 2.0\text{A}$	V_F	0.35	0.35	0.35	0.40	0.45	0.45	Volts
	$I_F = 10.0\text{A}$	V_F	0.48	0.48	0.48	0.55	0.70	0.70	Volts
Maximum reverse leakage current at rated V_R	$T_J = 25\text{ }^{\circ}\text{C}$	I_R	0.5	0.5	0.5	0.5	0.2	0.2	mA
	$T_J = 125\text{ }^{\circ}\text{C}$		50	50	50	50	20	20	mA

THERMAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	ALP10L40-T7B	ALP10L45-T7B	ALP10L50-T7B	ALP10L60-T7B	ALP10L80-T7B	ALP10L100-T7B	UNIT
Typical thermal resistance junction to ambient (Note 1)	$R_{\theta JA}$	60.0						$^{\circ}\text{C/W}$

Note:

1. Mounted on FR-4 PCB Copper pad area. Cathode pad dimensions 4.95mm x 3.4mm.
Anode pad dimensions 1.55mm x 5.0mm.

TYPICAL DEVICE CHARACTERISTICS CURVES

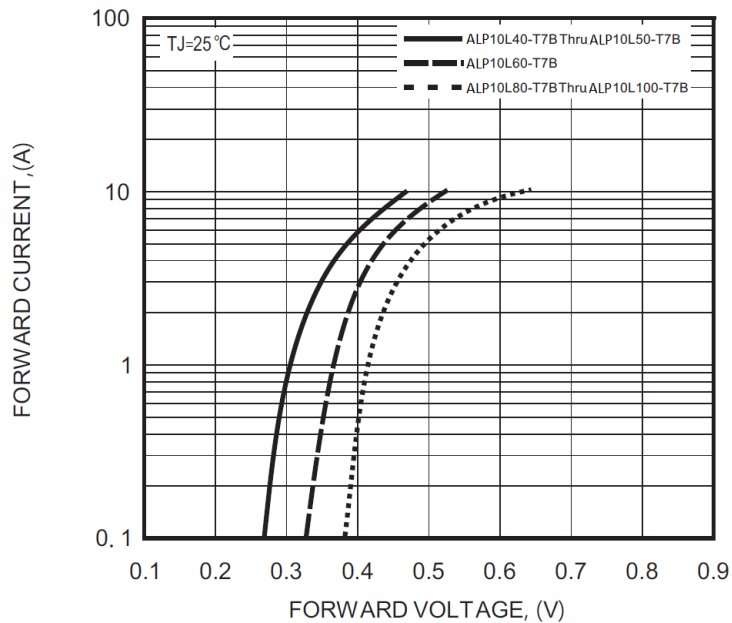


Fig1. TYPICAL FORWARD CHARACTERISTICS

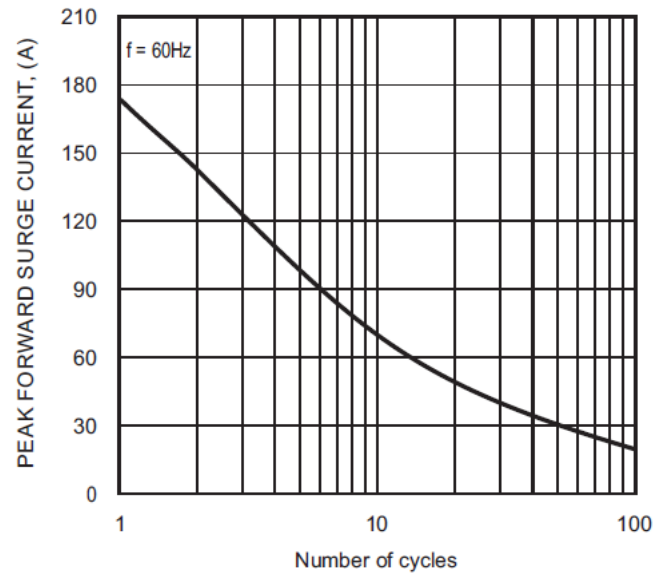


Fig2. MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

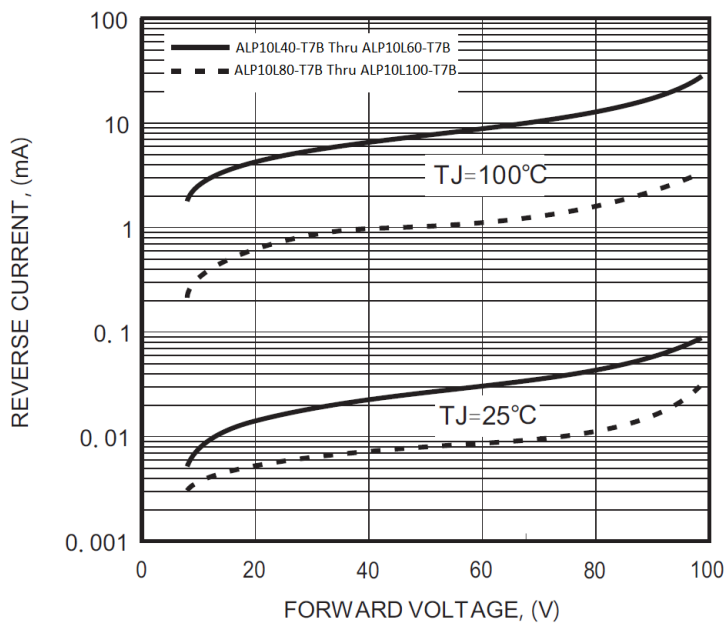


Fig3. TYPICAL REVERSE LEAKAGE CHARACTERISTICS

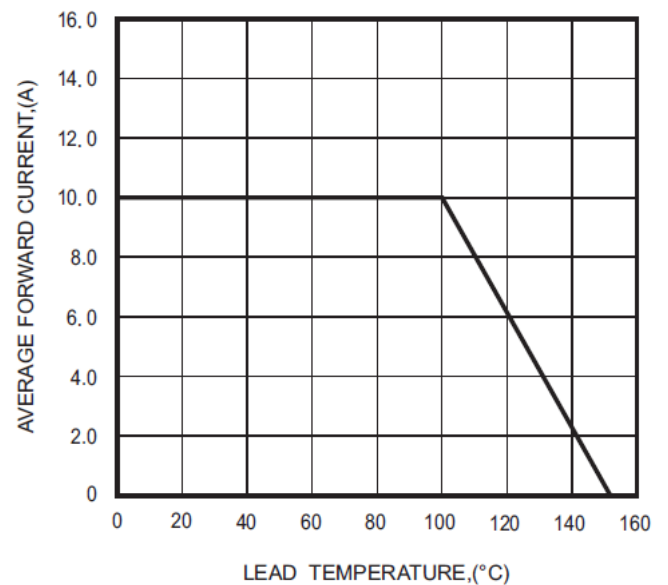
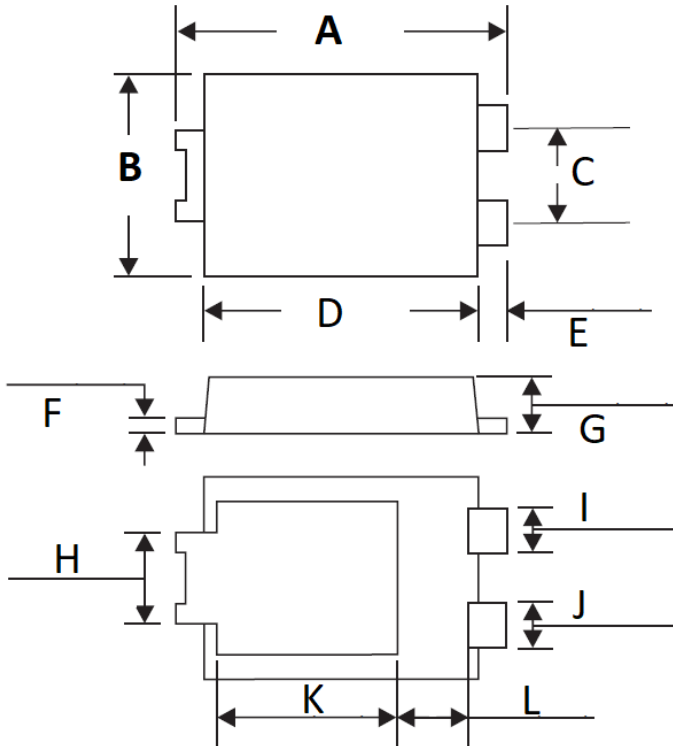


Fig4. TYPICAL FORWARD CURRENT DERATING CURVE

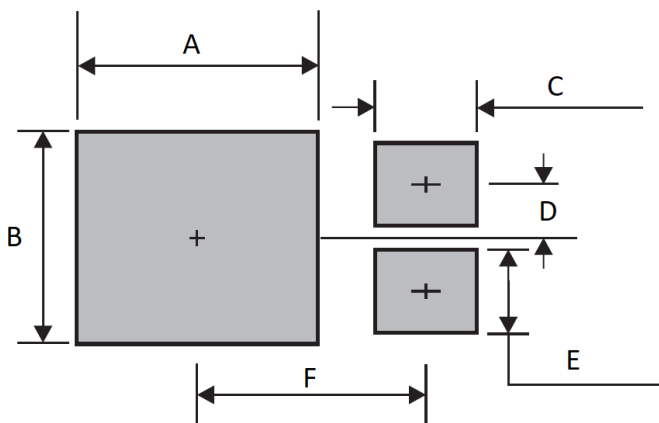
PACKAGE INFORMATION

TO-277B



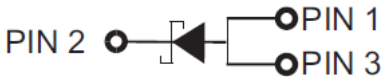
OUTLINE DIMENSIONS				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	6.35	6.70	0.250	0.264
B	3.75	4.30	0.148	0.170
C	1.65	1.95	0.065	0.077
D	5.25	5.50	0.207	0.217
E	0.45	0.75	0.018	0.029
F	0.15	0.43	0.006	0.017
G	1.00	1.30	0.040	0.052
H	1.65	1.95	0.065	0.077
I	0.75	1.05	0.029	0.041
J	0.75	1.05	0.029	0.041
K	3.05	3.55	0.120	0.140
L	0.85	1.30	0.033	0.052

NOTES
1. Dimensions are exclusive of mold flash and metal burrs.



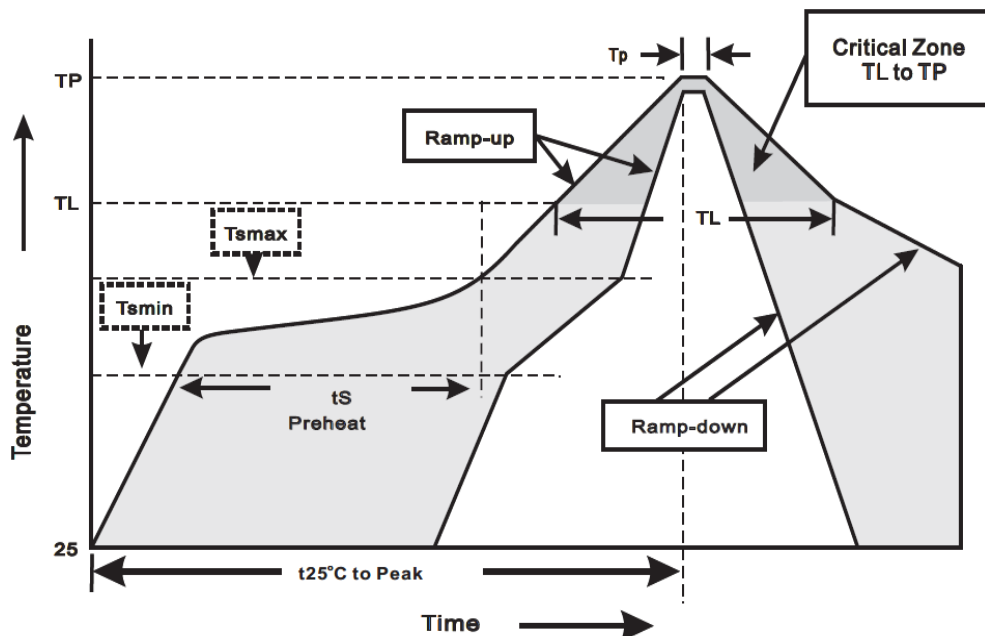
PAD LAYOUT DIMENSIONS		
DIM	MILLIMETERS	INCHES
	Typ.	Typ.
A	5.35	0.211
B	3.60	0.142
C	1.85	0.073
D	0.90	0.035
E	1.50	0.059
F	4.30	0.169

PINNING INFORMATION

PIN	SIMPLIFIED OUTLINE	SYMBOL
PIN 1 Anode PIN 3 Anode PIN 2 Cathode		

SOLDERING PARAMETERS
SUGGESTED THERMAL PROFILES FOR SOLDERING PROCESSES

1. Storage environment: Temperature=5 °C~40 °C Humidity=55% ±25%
2. Reflow soldering of surface-mount devices



3. Reflow soldering

PROFILE FEATURE	SOLDERING CONDITION
Average ramp-up rate (T_L to T_P)	<3 °C/sec
Preheat - Temperature Min (T_{smin}) - Temperature Max (T_{smax}) - Time (min to max) (t_s)	150 °C 200 °C 60 ~ 120 sec
T_{smax} to T_L - Ramp-upRate	<3 °C/sec
Time maintained above: - Temperature (T_L) - Time(t_L)	217 °C 60 ~ 260 sec
Peak Temperature (T_P)	255 °C-0/+5 °C
Time within 5 °C of actual Peak Temperature(t_P)	10 ~ 30 sec
Ramp-down Rate	<6 °C/sec
Time 25 °C to Peak Temperature	<6 minutes



beyond boundaries...

ALP10L40-T7B thru ALP10L100-T7B TO-277B

PRODUCT HIGH RELIABILITY TEST CAPABILITIES

ITEM	TEST CONDITIONS	STANDARD
Solder Resistance	At 260±5°C for 10±2Sec.	MIL-STD-750D METHOD-2031
Solderability	At 245±5°C for 5 sec.	MIL-STD-202F METHOD-208
High Temperature Reverse Bias	$V_R = 80\%$ rate at $T_J = 150^\circ\text{C}$ for 168 hrs.	MIL-STD-750D METHOD-1038
Forward Operation Life	Rated average rectifier current at $T_A = 25^\circ\text{C}$ for 500hrs	MIL-STD-750D METHOD-1027
Intermittent Operation Life	$T_A = 25^\circ\text{C}$, $I_F = I_O$ On state: power on for 5 min. off state: power off for 5 min. on and off for 500 cycles.	MIL-STD-750D METHOD-1036
Pressure Cooker	15P _{SIG} at $T_A = 121^\circ\text{C}$ for 4Hrs	JESD22-A102
Temperature Cycling	-55°C to +125°C dwelled for 30min and transferred for 5min. total 10 cycles.	MIL-STD-750D METHOD-1051
Forward Surge	8.3ms square-wave, one surge.	MIL-STD-750D METHOD-4066-2
Humidity	At $T_A = 85^\circ\text{C}$, RH=85% for 1000hrs.	MIL-STD-750D METHOD-1021
High Temperature Storage Life	At 175°C for 1000hrs.	MIL-STD-750D METHOD-1031



beyond boundaries...

ALP10L40-T7B thru ALP10L100-T7B

TO-277B

CUSTOMER NOTE:

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2. In Europe, please dispose as per EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE).



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