

MCR10L300CT, MCR10L300FCT



LOW VF MOS CONTROLLED SCHOTTKY RECTIFIERS

VOLTAGE	300 Volts	CURRENT	10 Amperes
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Marking

FEATURES

- Power pack
- Metal silicon junction ,majority carrier conduction
- Guard ring for overvoltage protection
- Low power loss ,high efficiency
- High current capability ,low forward voltage drop
- High forward surge capability
- High frequency operation
- Solder bath temperature 275°C maximum, 10s, per JESD22-B106 (for TO-220-3L and TO-220F-3L package)
- Component in accordance to RoHS 2011/65/EU

MECHANICAL DATA

- Case: JEDEC TO-220-3L、TO-220F-3L
- Molding compound meets UL94V-0 flammability rating
- Terminals: Lead solderable per J-STD-002 and JESD22-B102
- Polarity: As marked
- Mounting Torque: 10 in-lbs maximum

TYPICAL APPLICATIONS

- For use in low voltage ,high frequency inverters ,DC/DC converters,free wheeling ,and polarity protection applications

TO-220-3L MCR10L300CT	TO-220F-3L MCR10L300FCT
1 2 3	1 2 3

Maximum Ratings (Ratings at 25°C ambient temperature unless otherwise specified)

Parameter	Symbol	MCR10L300CT/FCT	Unit
Maximum repetitive peak reverse voltage@0.5mA	V_{RRM}	300	V
Maximum average forward rectified current (see fig.1)	Per leg	5	A
	Total device	10	
Peak forward surge current 8.3ms single half sine-wave superimposed on rated load (JEDEC method at rated TL)	I_{FSM}	110	A
Peak repetitive reverse current per diode (Note 1)	I_{RRM}	2	uA
Operating junction	T_J	-55 to +150	°C
Storage temperature range	T_{STD}	-55 to +150	°C
Isolation voltage(ITO-220AB only)from terminals to heatsink t=1 min	V_{AC}	1500	V

Electrical Characteristics (Ratings at 25°C ambient temperature unless otherwise specified)

Parameter	Symbol	Test Conditions	TYP.	MAX.	Unit	
Instaneous forward voltage per diode	VF	$T_A=25^\circ\text{C}$	IF=3.0A	0.83	0.87	V
			IF=5.0A	0.88	--	
			IF=8.0A	0.98	--	
		$T_A=125^\circ\text{C}$	IF=3.0A	--	1.15	
			IF=5.0A	--	1.20	
			IF=8.0A	--	1.30	
Maximum instantaneous reversecurrent at rated DC blocking voltage	IR	VR=100V	$T_A=25^\circ\text{C}$	0.2	2	uA
			$T_A=100^\circ\text{C}$	1	2	mA
			$T_A=125^\circ\text{C}$	1.5	5	
Junction Capacitance (Note 2)	CJ	4V,1MHz	750		pF	

Thermal Characteristics (Ratings at 25°C ambient temperature unless otherwise specified)

Parameter	Symbol	MCR10L300CT	MCR10L300FCT	Unit
Typical thermal resistance (Note 3)	$R_{\theta JC}$	2.5	4.5	°C/W

- Notes: 1.Pulse test: 300 μs pulse width, 1% duty cycle.
 2.Measured at 1.0 MHz and applied reverse voltage of 4.0Vdc.
 3.Thermal resistance from junction to case

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RATING AND CHARACTERISTIC CURVES

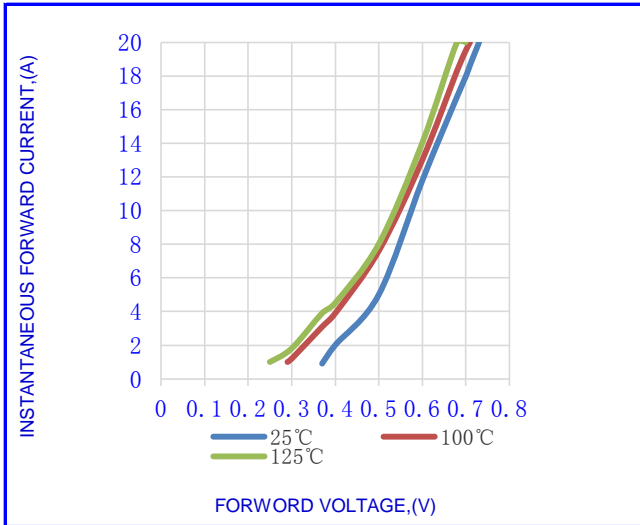


Fig.1-TYPICAL INSTANTANEOUS FORWARD

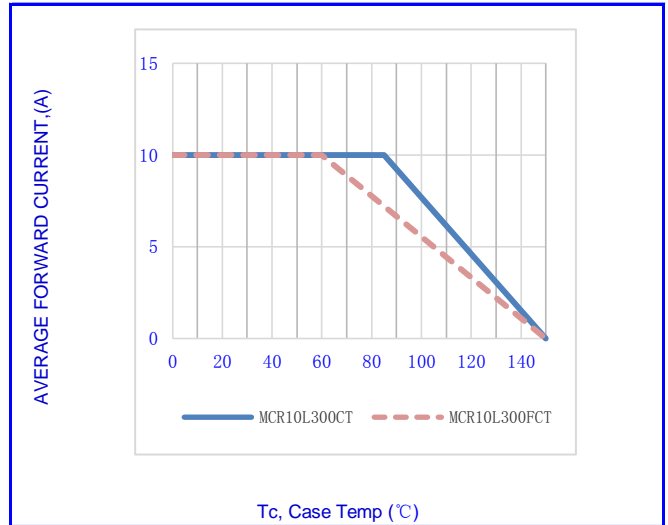


Fig.2- FORWARD CURRENT DERATING CURVE

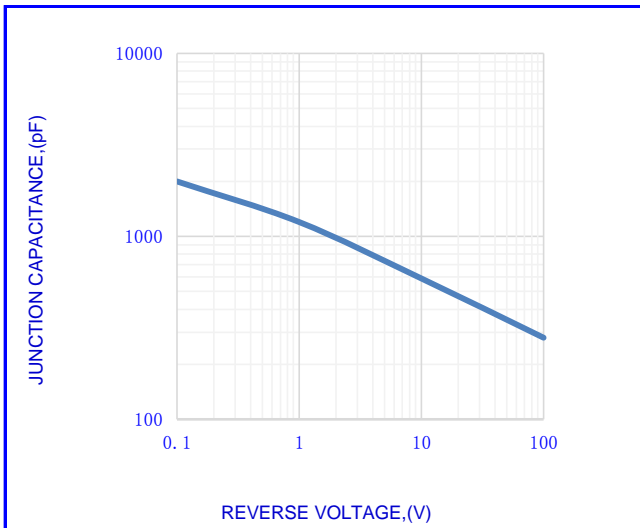


Fig.3- TYPICAL JUNCTION CAPACITANCE

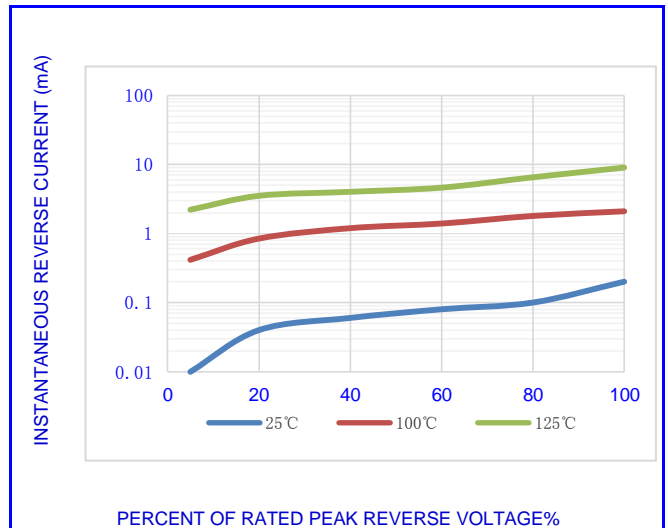


Fig.4- TYPICAL REVERSE CHARACTERISTICS

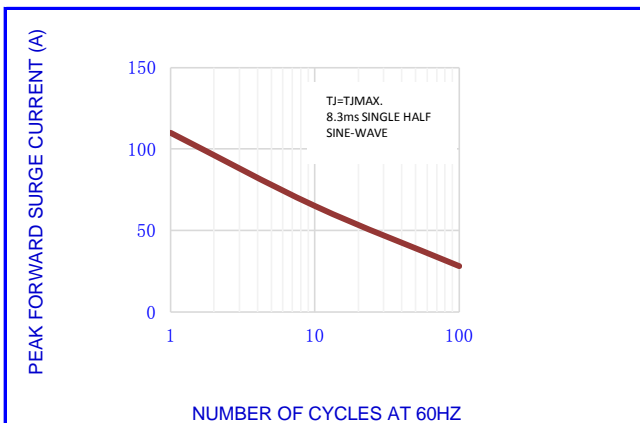
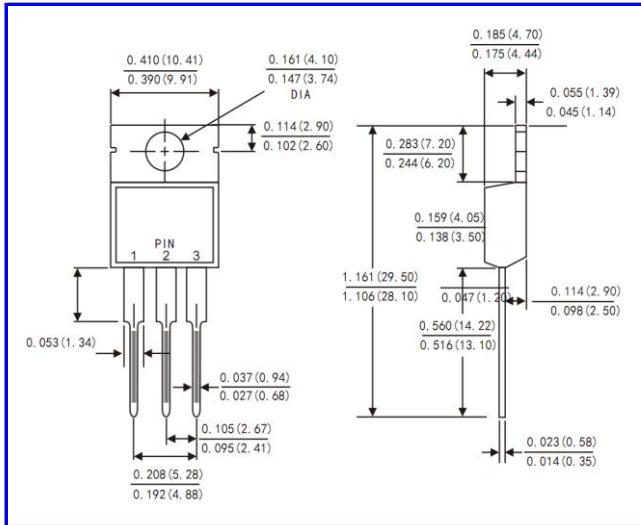


Fig.5-MAX. NON-REPETITIVE SURGE CURRENT

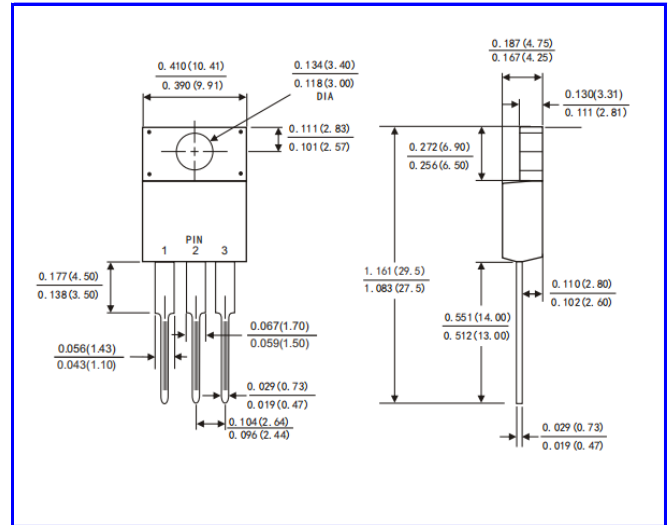
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OUTLINE DRAWINGS



TO-220-3L



TO-220F-3L

Packing Information

Product code	Pack	Box Size LxWxH(mm)	Quantity(pcs/box)	Carton SizeLxWxH(mm)	Quantity(box/carton)
MCR10L300CT	P/T	550*150*40	1000	580*230*175	5
MCR10L300FCT	P/T	550*150*40	1000	580*230*175	5

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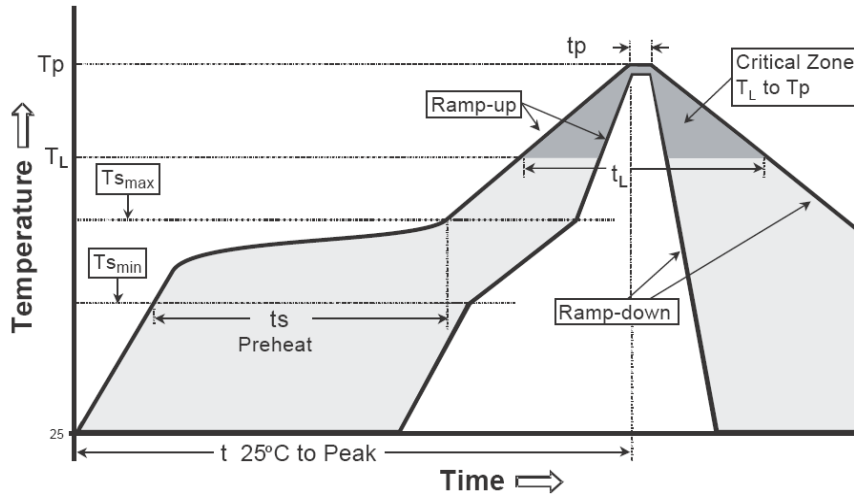
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Recommended wave soldering condition

Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

Recommended temperature profile for IR reflow



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (T _{smax} to T _p)	3°C/second max.	3°C/second max.
Preheat -Temperature Min(T _{S min}) -Temperature Max(T _{S max}) -Time(t _{s min} to t _{s max})	100°C 150°C 60-120 seconds	150°C 200°C 60-180 seconds
Time maintained above: -Temperature (T _L) - Time (t _L)	183°C 60-150 seconds	217°C 60-150 seconds
Peak Temperature(T _P)	240 +0/-5 °C	260 +0/-5 °C
Time within 5°C of actual peak temperature(t _p)	10-30 seconds	20-40 seconds
Ramp down rate	6°C/second max.	6°C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

Note : All temperatures refer to topside of the package, measured on the package body surface.

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