



Microsemi Corp.

The diode experts

SCOTTSDALE, AZ

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40SL SERIES

DESCRIPTION/FEATURES

- ECONOMICAL 4 AMP I_O MOLDED DEVICE OFFERS CAPABILITY OF STUD-MOUNTED RECTIFIERS
- 150 AMPS SURGE PROVIDES HIGH IN-RUSH CURRENT CAPABILITY
- WIDE VOLTAGE RANGE AVAILABLE: 50 TO 1000 VOLTS V_{RRM}

MAJOR RATINGS AND CHARACTERISTICS

	40 SL	
$I_{F(AV)}$	4	A
at Max. T_L	62	°C
I_{FSM} at 50Hz	143	A
I_{FSM} at 60Hz	150	A
I^2_t at 50Hz	103	A ² s
I^2_t at 60Hz	94	A ² s
T_J	-40 to 150	°C
V_{RRM} Range	50 - 1000	V
t_{rr}	200	ns

VOLTAGE RATINGS

Part Number	Working V_{RRM} Peak Reverse Voltage	V_R (V) Max. Direct Reverse Voltage
	$T_J = -40^\circ\text{C to } 200^\circ\text{C}$	$T_J = -40^\circ\text{C to } 200^\circ\text{C}$
40SL05	50	50
40SL1	100	100
40SL2	200	200
40SL4	400	400
40SL5	500	500
40SL6	600	600
40SL8	800	800
40SL10	1000	1000

ELECTRICAL SPECIFICATIONS

	40SL	Units	Conditions
$I_{F(AV)}$ Max. average forward current	4	A	1-phase operation, 180° conduction. $T_L = 95^\circ\text{C}$, $\ell = 9.5\text{ mm}$ (0.375 in.)
I_{FSM} Max. peak one-cycle non-repetitive surge current	143	A	Half cycle 50Hz sine wave or 6ms rectangular pulse
	150		Following any rated load condition and with rated V_{RRM} applied.
	170		Half cycle 60Hz sine wave or 5ms rectangular pulse
	178		Following any rated load condition and with V_{RRM} applied following surge = 0.
I^2_t Max. I^2_t for fusing	103	A ² s	Half cycle 50Hz sine wave or 6ms rectangular pulse
	94		Following any rated load condition and with V_{RRM} applied following surge = 0.
	145		Half cycle 60Hz sine wave or 5ms rectangular pulse
	132		Following any rated load condition and with V_{RRM} applied following surge = 0.
$I^2\sqrt{t}$ Max. $I^2\sqrt{t}$ for individual device fusing (Note 1.)	1450	A ² $\sqrt{s}$	$t = 10\text{ ms}$ With rated V_{RRM} applied following surge, initial $T_J = 175^\circ\text{C}$. $t = 8.3\text{ ms}$ With $V_{RRM} = 0$ following surge, initial $T_J = 175^\circ\text{C}$. $t = 10\text{ ms}$ With $V_{RRM} = 0$ following surge, initial $T_J = 175^\circ\text{C}$. $t = 8.3\text{ ms}$
V_{FM} Max. peak forward voltage	1.40	V	$I_{F(AV)} = 4\text{ A}$ (12.6A peak), $T_J = 25^\circ\text{C}$
$I_{R(AV)}$ Max. average reverse current	5	mA	$T_L = 62^\circ\text{C}$, V_{RRM} = rated V_{RRM} . $I_{F(AV)}$ = rated $I_{F(AV)}$, 1 phase operation.
I_R Max. dc reverse current	3	mA	$T_L = 100^\circ\text{C}$ — V_R = Rated V_R .
	25	μA	$T_L = 25^\circ\text{C}$
t_{rr} Max. reverse recovery time	200	ns	$T_L = 25^\circ\text{C}$, $I_F = 1\text{ A}$, $V_R = 30\text{ V}$
			$di/dt = 25\text{ A}/\mu\text{s}$
$I_{RM(REC)}$ Max. peak reverse recovery current	5	A	$T_L = 25^\circ\text{C}$, $I_{FM} = 12.5\text{ A}$ $t_p \approx 1.6\mu\text{s}$, $di/dt = 25\text{ A}/\mu\text{s}$

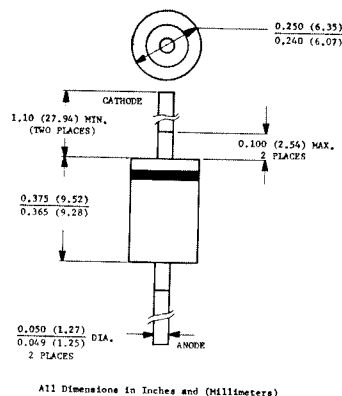
THERMAL MECHANICAL SPECIFICATIONS

T_J	Max. operating junction temperature range	-40°C to 150	°C
T_{stg}	Max. storage temperature range	-40°C to 175	°C
R_{thJC}	Max. internal thermal resistance, junction-to-leads	--	deg C/W (Note 2.)
ℓ	Length of leads (ℓ) (1/8") 3.2 mm	11.0	deg C/W $\pm 10\%$
	Length of leads (ℓ) (3/8") 9.5 mm	14.7	
	Length of leads (ℓ) (3/4") 19 mm	20.0	
wt	Approximate weight	1.5 (0.053)	g (oz)

Note 1. I^2t for time $t_s = I^2t / I^2 \cdot \sqrt{t_s}$

Note 2. DC operation, double side cooled, measured 9.5 mm (0.375 in.) from body.

4 AMP AXIAL-LEAD FAST RECOVERY RECTIFIER DIODES



All Dimensions in Inches and (Millimeters)

MECHANICAL CHARACTERISTICS

CASE: Molded plastic use Flame Retardant Epoxy.

TERMINALS: Axial leads, solderable per MIL-STD-202, Method 208.

POLARITY: Color band denotes cathode.

MOUNTING POSITION: Any.

40SL Series

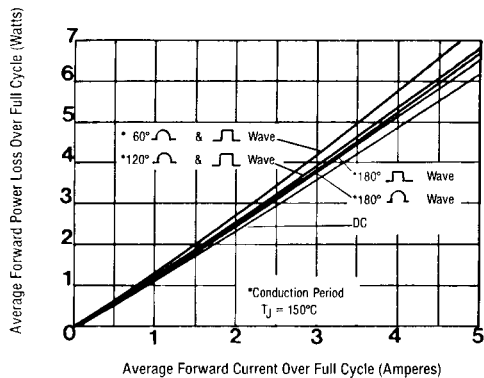


FIGURE 1
MAXIMUM LOW-LEVEL AVERAGE
FORWARD POWER LOSS VS.
AVERAGE FORWARD CURRENT

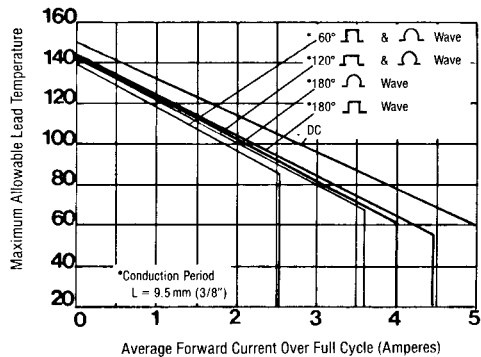


FIGURE 2
AVERAGE FORWARD CURRENT
VS. LEAD TEMPERATURE

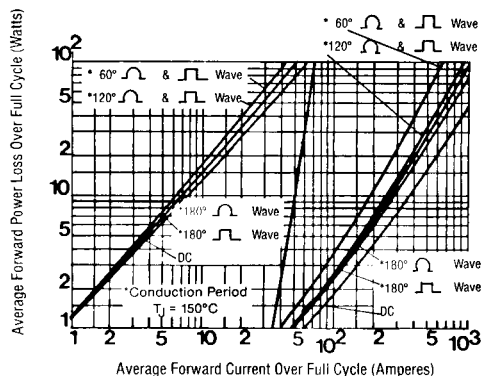


FIGURE 3
MAXIMUM HIGH-LEVEL FORWARD
POWER LOSS VS. AVERAGE
FORWARD CURRENT

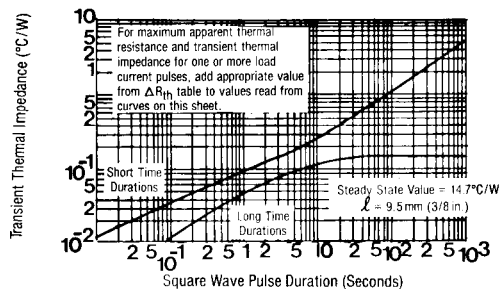


FIGURE 4
MAXIMUM TRANSIENT THERMAL
IMPEDANCE JUNCTION TO LEAD
VS. PULSE DURATION

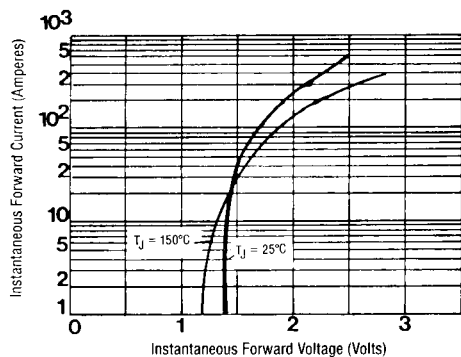


FIGURE 5
MAXIMUM FORWARD VOLTAGE
VS. FORWARD CURRENT

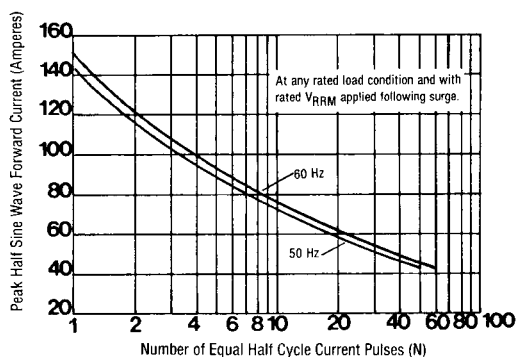


FIGURE 6
MAXIMUM NON-REPETITIVE
SURGE CURRENT VS. NUMBER
OF CURRENT PULSES