ALSO AVAILABLE IN SURFACE MOUNT

Microsemi Corp.
The diode experts

SCOTTSDALE, AZ
For more information call:
(602) 941-6300

40SL SERIES

4 AMP AXIAL-LEAD FAST RECOVERY RECTIFIER DIODES

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^2t at 50Hz	103	A^2s
I^2t at 60Hz	94	A^2s
T_J	-40 to 150	°C
V_{RRM} Range	50 - 1000	V
t_{rr}	200	ns

VOLTAGE RATINGS

Part Number	Working V_{RWM} Peak Reverse Voltage T_J = -40°C to 200°C	V_R — (V) Max. Direct Reverse Voltage T_J = -40°C to 200°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

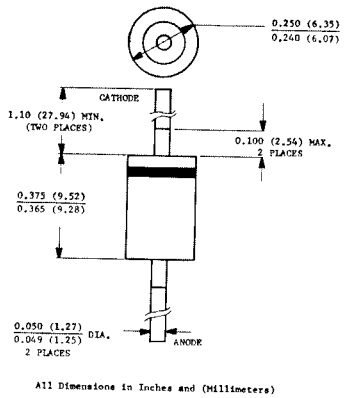
ELECTRICAL SPECIFICATIONS

		40SL	Units	Conditions
$I_{F(AV)}$	Max. average forward current	4	A	1-phase operation, 180° conduction. T_L = 95°C, ℓ = 9.5 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 — Following any rated load condition and with rated V_{RRM} applied.
		150		Half cycle 60Hz sine wave or 5ms rectangular pulse
		170		Half cycle 50Hz sine wave or 6ms rectangular pulse — Following any rated load condition and with V_{RRM} applied following surge = 0.
		178		Half cycle 60Hz sine wave or 5ms rectangular pulse
I^2t	Max. I^2t for fusing	103	A^2s	t = 10 ms — With rated V_{RRM} applied following surge, initial T_J = 175°C.
		94		t = 8.3 ms
	Max. I^2t for individual device fusing	145		t = 10 ms — With V_{RRM} = 0 following surge, initial T_J = 175°C.
		132		t = 8.3 ms
$I^2\sqrt{t}$	Max. $I^2\sqrt{t}$ for individual device fusing (Note 1.)	1450	$A^2\sqrt{s}$	t = 0.1 to 10ms, V_{RRM} = 0 following surge.
V_{FM}	Max. peak forward voltage	1.40	V	$I_{F(AV)}$ = 4A (12.6A peak), T_J = 25°C
$I_{R(AV)}$	Max. average reverse current	5	mA	T_L = 62°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°C — V_R = Rated V_R.
		25	μA	T_L = 25°C
t_{rr}	Max. reverse recovery time	200	ns	T_L = 25°C, I_F = 1A, V_R = 30V
	Typ. reverse recovery time			di/dt = 25A/μs
$I_{RM(REC)}$	Max. peak reverse recovery current	5	A	T_L = 25°C, I_{FM} = 12.5A $t_p \approx 1.6\mu s$, di/dt = 25A/μs

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	±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 $t_x = I^2\sqrt{t} \cdot \sqrt{t_x}$
Note 2. DC operation, double side cooled, measured 9.5 mm (0.375 in.) from body.



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

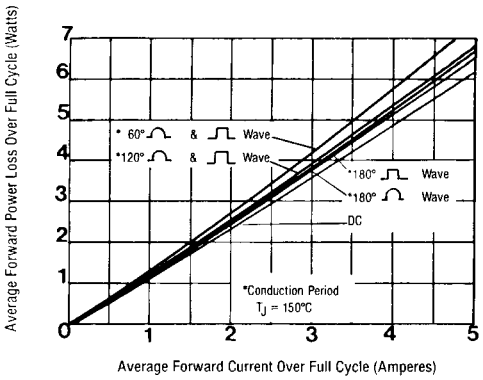


FIGURE 1
MAXIMUM LOW-LEVEL AVERAGE FORWARD POWER LOSS VS. AVERAGE FORWARD CURRENT

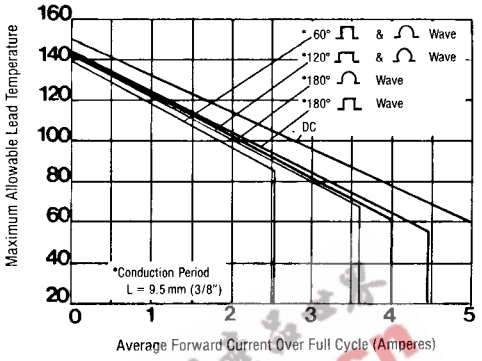


FIGURE 2
AVERAGE FORWARD CURRENT VS. LEAD TEMPERATURE

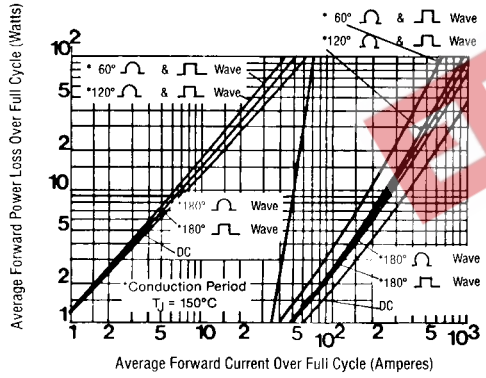


FIGURE 3
MAXIMUM HIGH-LEVEL FORWARD POWER LOSS VS. AVERAGE FORWARD CURRENT

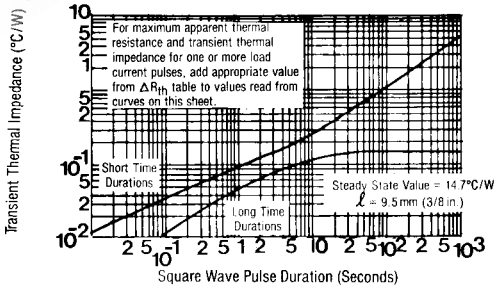


FIGURE 4
MAXIMUM TRANSIENT THERMAL IMPEDANCE JUNCTION TO LEAD VS. PULSE DURATION

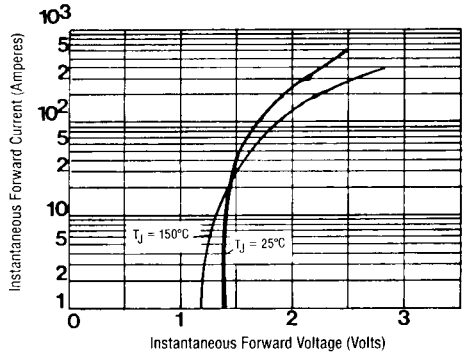


FIGURE 5
MAXIMUM FORWARD VOLTAGE VS. FORWARD CURRENT

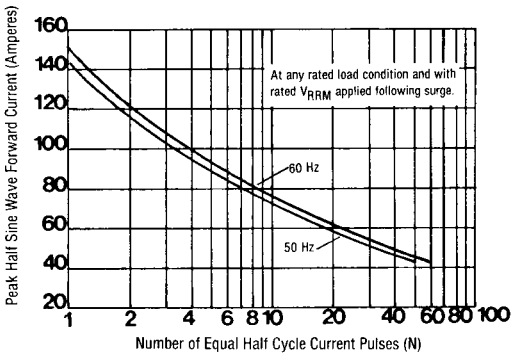


FIGURE 6
MAXIMUM NON-REPETITIVE SURGE CURRENT VS. NUMBER OF CURRENT PULSES