



**Microsemi Corp.**  
The diode experts

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

### VOLTAGE RATINGS

Part Number	$V_R = (V)$ Max. Direct Reverse Voltage	
	Working $V_{RRM}$ Peak 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. $T_L = 95^\circ\text{C}$ , $l = 9.5$ mm (0.375 in.)
$I_{FSM}$ Max. peak one-cycle non-repetitive surge current	143	A	Following any rated load condition and with rated $V_{RRM}$ applied.
	150		
	170		
	178		
$I^2t$ Max. $I^2t$ for fusing	103	A <sup>2</sup> s	Following any rated load condition and with $V_{RRM}$ applied following surge = 0.
	94		
	145		
	132		
$I^2\sqrt{t}$ Max. $I^2\sqrt{t}$ for individual device fusing (Note 1.)	1450	A <sup>2</sup> $\sqrt{s}$	t = 10 ms With rated $V_{RRM}$ applied following surge, initial $T_J = 175^\circ\text{C}$ . t = 8.3 ms With $V_{RRM} = 0$ following surge, initial $T_J = 175^\circ\text{C}$ .
$V_{FM}$ Max. peak forward voltage	1.40	V	$I_{F(AV)} = 4$ A (12.6A peak), $T_J = 25^\circ\text{C}$
$I_{R(AV)}$ Max. average reverse current	5	mA	$T_L = 62^\circ\text{C}$ , $V_{RRM} = \text{rated } V_{RRM}$ , $I_{F(AV)} = \text{rated } I_{F(AV)}$ , 1 phase operation.
$I_R$ Max. dc reverse current	3	mA	$T_L = 100^\circ\text{C}$ - $V_R = \text{Rated } V_R$ , $T_L = 25^\circ\text{C}$
	25		
$t_{rr}$ Max. reverse recovery time	200	ns	$T_L = 25^\circ\text{C}$ , $I_F = 1$ A, $V_R = 30$ V di/dt = 25 A/ $\mu$ s
$I_{M(REC)}$ Max. peak reverse recovery current	5	A	$T_L = 25^\circ\text{C}$ , $I_{FM} = 12.5$ A $t_p \approx 1.6\mu$ s, di/dt = 25 A/ $\mu$ s

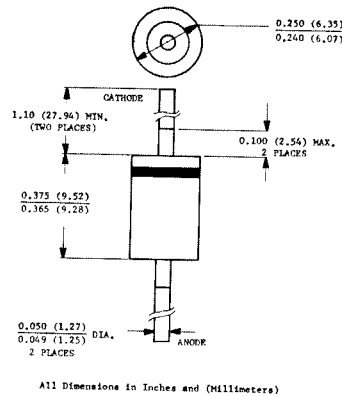
### THERMAL MECHANICAL SPECIFICATIONS

$T_J$	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 ±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  $t_s = I^2 / (1/\sqrt{t})$

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

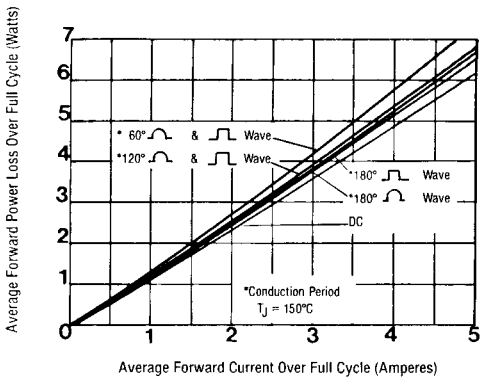
CASE: Molded plastic use Flame Retardant epoxy.

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

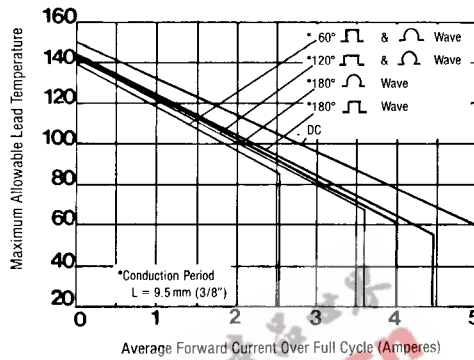
POLARITY: Color band denotes cathode.

MOUNTING POSITION: Any.

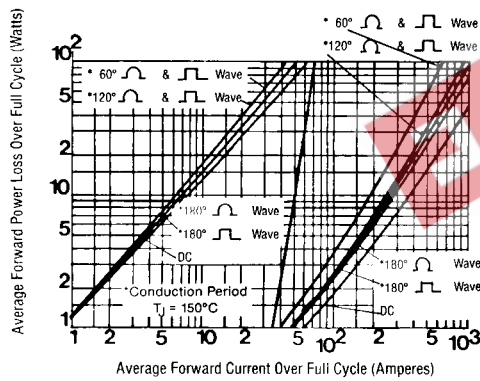
# 40SL Series



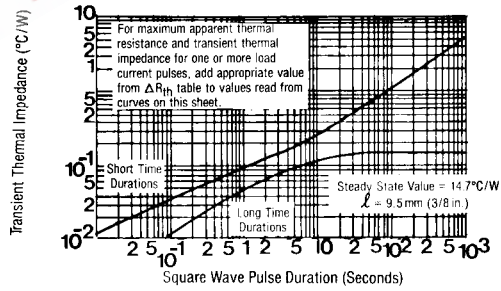
**FIGURE 1**  
MAXIMUM LOW-LEVEL AVERAGE FORWARD POWER LOSS VS. AVERAGE FORWARD CURRENT



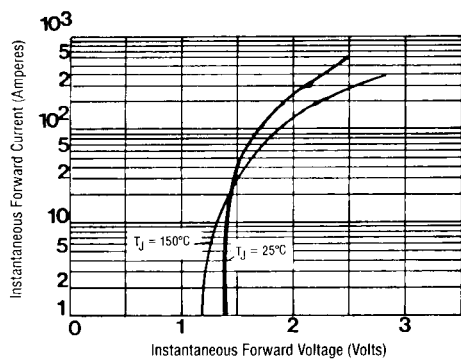
**FIGURE 2**  
AVERAGE FORWARD CURRENT VS. LEAD TEMPERATURE



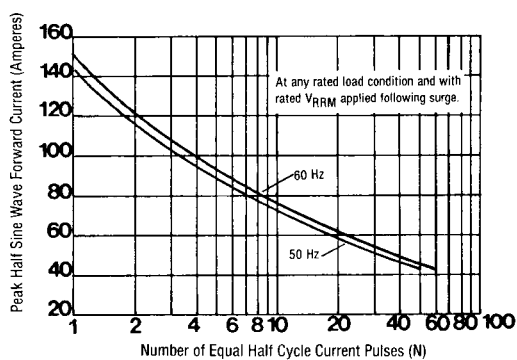
**FIGURE 3**  
MAXIMUM HIGH-LEVEL FORWARD POWER LOSS VS. AVERAGE FORWARD CURRENT



**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