MOTOROLA
SEMICONDUCTORS
P.O. BOX 20912 • PHOENIX, ARIZONA 85036

MUR105 MUR150
MUR110 MUR160
MUR115 MUR170
MUR120 MUR180
MUR130 MUR190
MUR140 MUR1100

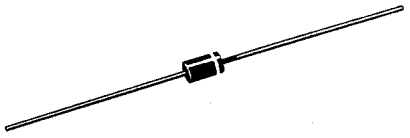
SWITCHMODE POWER RECTIFIERS

. . . designed for use in switching power supplies, inverters and as free wheeling diodes, these state-of-the-art devices have the following features:

- Ultrafast 25, 50 and 75 Nanosecond Recovery Times
- 175°C Operating Junction Temperature
- Low Forward Voltage
- Low Leakage Current
- High Temperature Glass Passivated Junction
- Reverse Voltage to 1000 Volts

ULTRAFAST RECTIFIERS

1.0 AMPERE
50–1000 VOLTS



CASE 59-04
PLASTIC PACKAGE

MAXIMUM RATINGS

Rating	Symbol	MUR 105	110	115	120	130	140	150	160	170	180	190	1100	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	50	100	150	200	300	400	500	600	700	800	900	1000	Volts
Average Rectified Forward Current (Square Wave Mounting Method #3 Per Note 1)	$I_{F(AV)}$	1.0 @ T_A = 130°C			1.0 @ T_A = 120°C					1.0 @ T_A = 95°C				Amps
Nonrepetitive Peak Surge Current (Surge applied at rated load conditions, halfwave, single phase, 60 Hz)	I_{FSM}	35												Amps
Operating Junction Temperature and Storage Temperature	T_J, T_{stg}	−65 to +175												°C

THERMAL CHARACTERISTICS

Maximum Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	See Note 1	°C/W

ELECTRICAL CHARACTERISTICS

Maximum Instantaneous Forward Voltage (1) (i_F = 1.0 Amp, T_J = 150°C) (i_F = 1.0 Amp, T_J = 25°C)	v_F	0.710 0.875	1.05 1.25	1.50 1.75	Volts
Maximum Instantaneous Reverse Current (1) (Rated dc Voltage, T_J = 150°C) (Rated dc Voltage, T_J = 25°C)	i_R	50 2.0	150 5.0	600 10	μA
Maximum Reverse Recovery Time (I_F = 1.0 Amp, di/dt = 50 Amp/μs) (I_F = 0.5 Amp, i_R = 1.0 Amp, I_{REC} = 0.25 A)	t_{rr}	35 25	75 50	100 75	ns
Maximum Forward Recovery Time (I_F = 1.0 A, di/dt = 100 A/μs, I_{REC} to 1.0 V)	t_{fr}	25	50	75	ns

(1)Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤2.0%

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MUR105, 110 AND 115

FIGURE 1 — TYPICAL FORWARD VOLTAGE

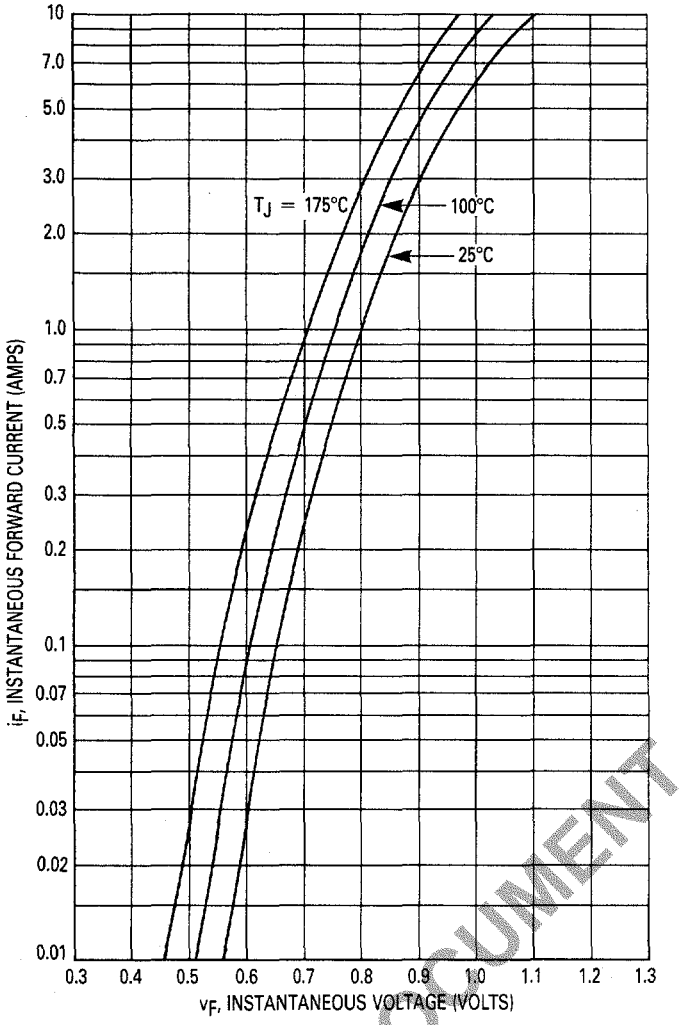


FIGURE 2 — TYPICAL REVERSE CURRENT*

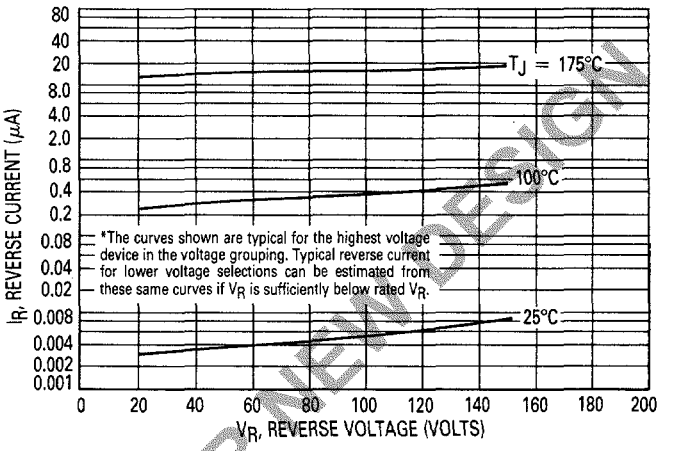


FIGURE 3 — CURRENT DERATING (MOUNTING METHOD #3 PER NOTE 1)

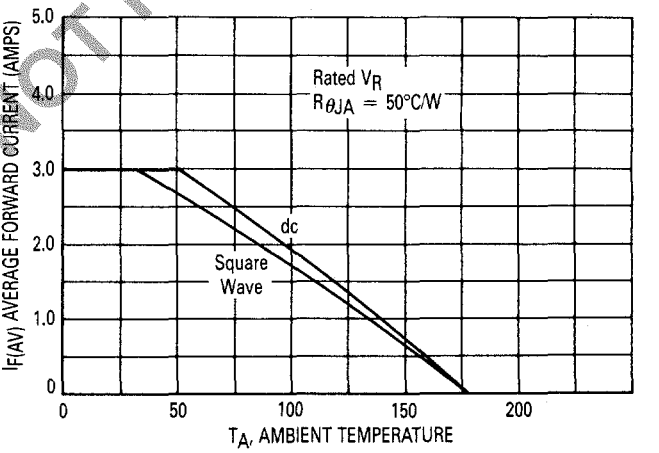


FIGURE 4 — POWER DISSIPATION

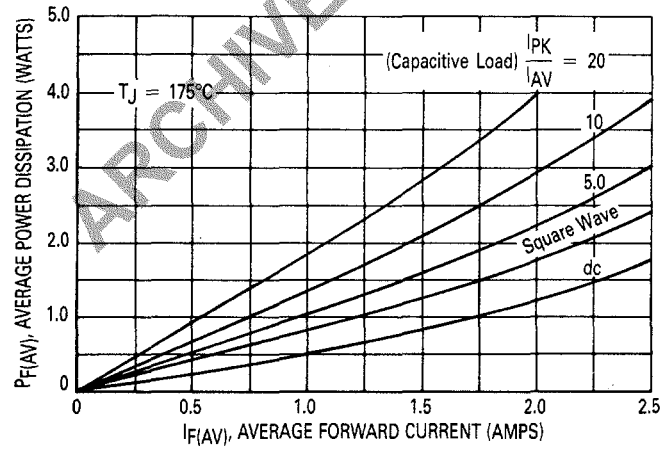
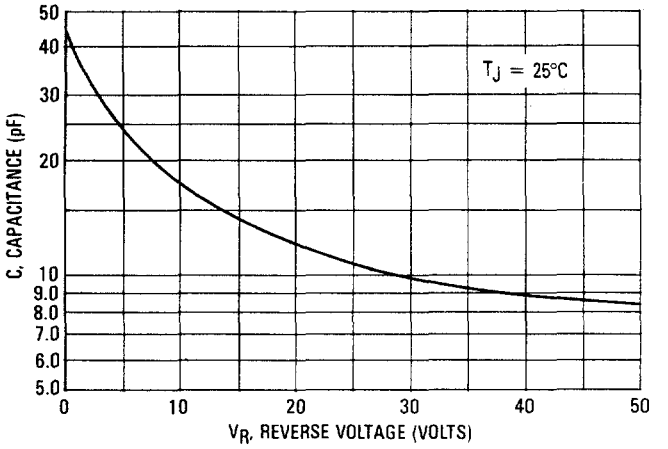


FIGURE 5 — TYPICAL CAPACITANCE



MUR120, 130, 140, 150, 160

FIGURE 6 — TYPICAL FORWARD VOLTAGE

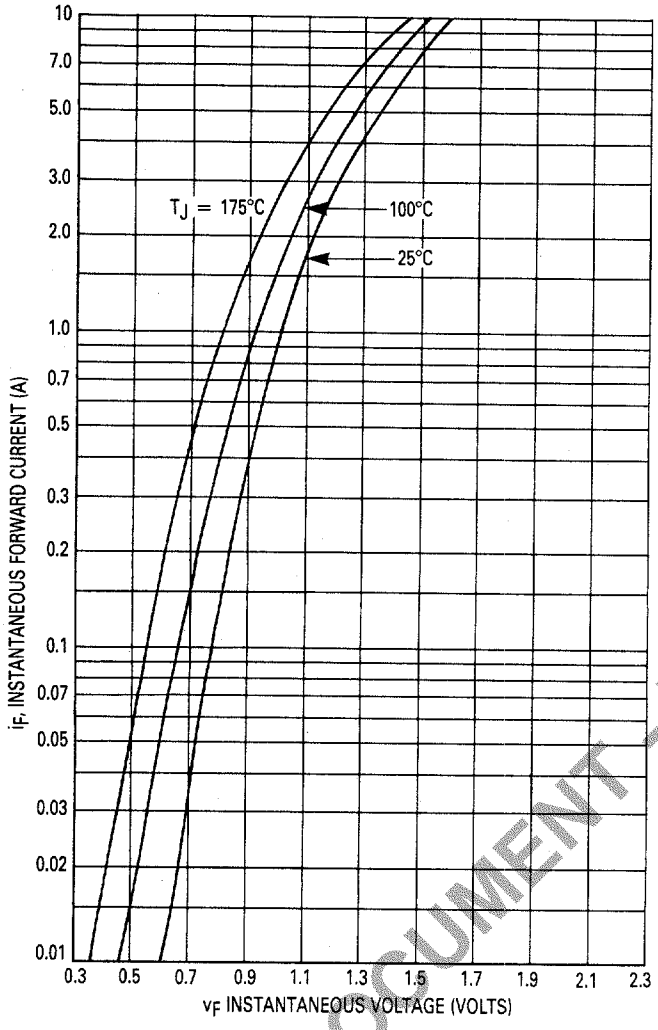


FIGURE 7 — TYPICAL REVERSE CURRENT*

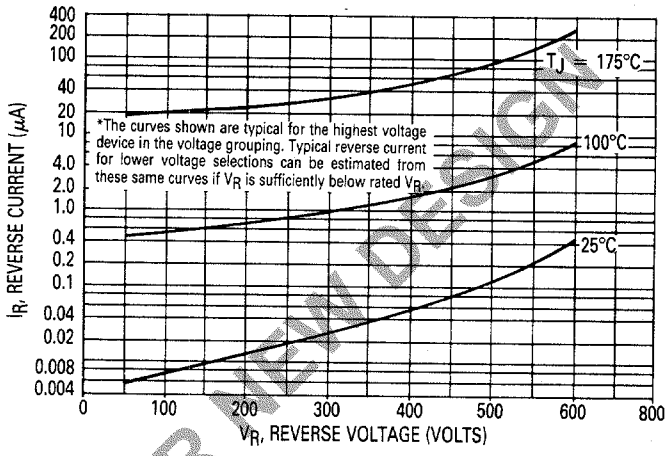


FIGURE 8 — CURRENT DERATING (MOUNTING METHOD #3 PER NOTE 1)

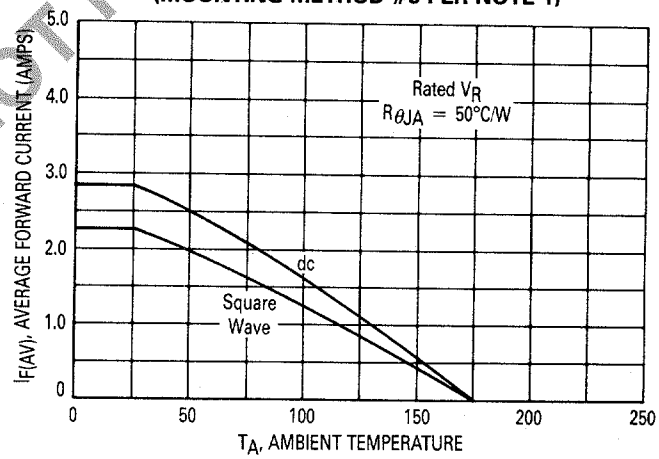


FIGURE 9 — POWER DISSIPATION

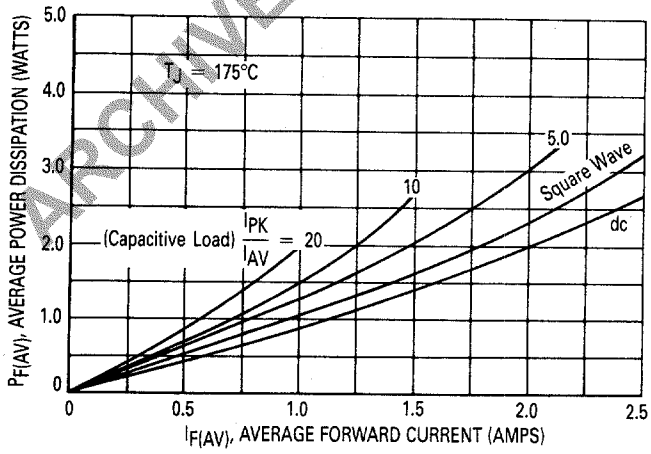


FIGURE 10 — TYPICAL CAPACITANCE

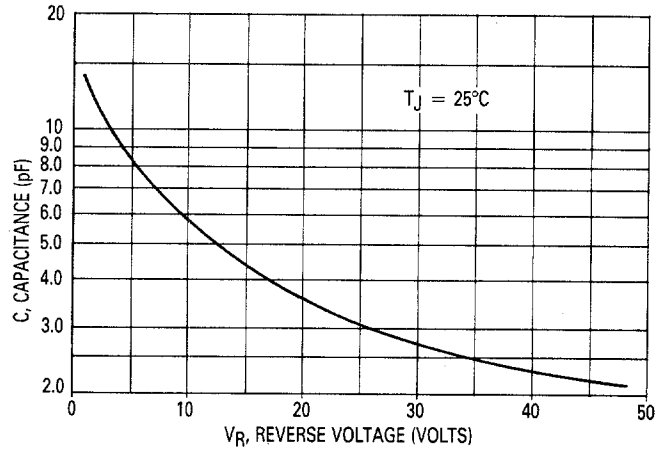


FIGURE 11 — TYPICAL FORWARD VOLTAGE

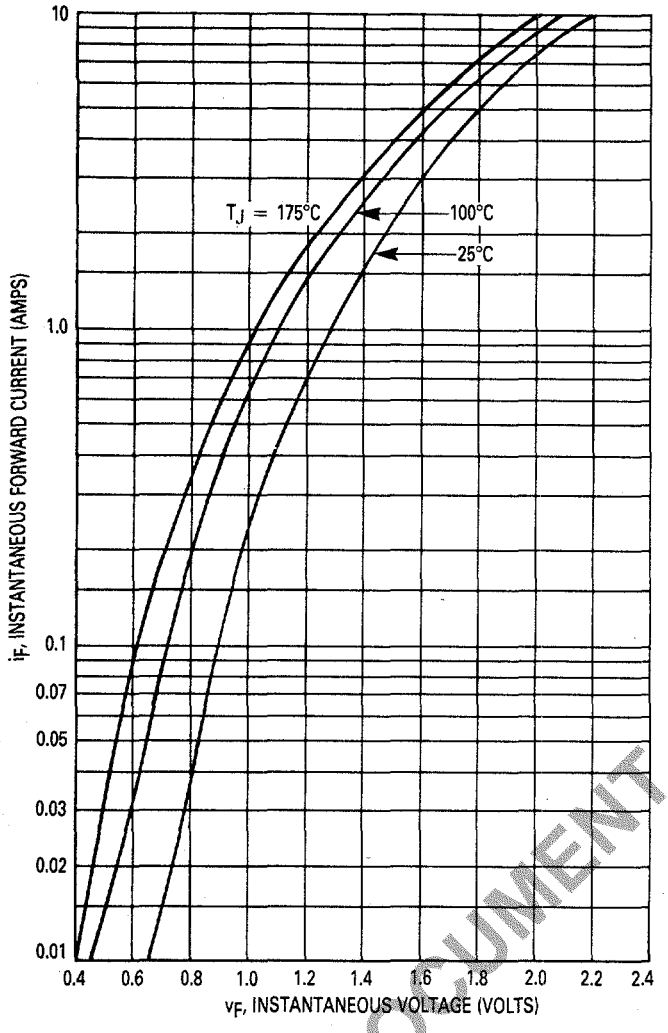


FIGURE 12 — TYPICAL REVERSE CURRENT*

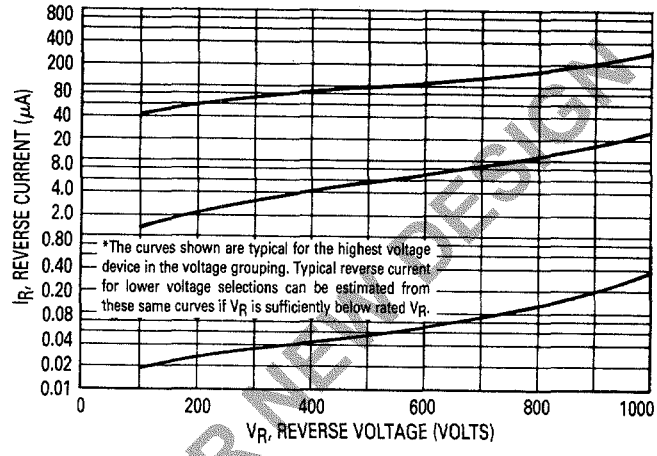


FIGURE 13 — CURRENT DERATING
(MOUNTING METHOD #3 PER NOTE 1)

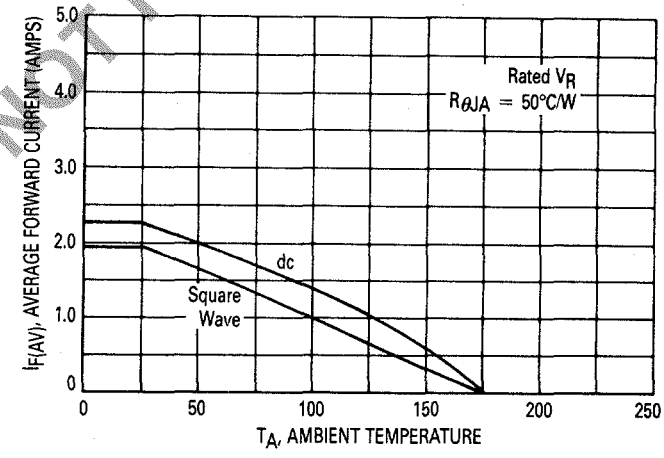


FIGURE 14 — POWER DISSIPATION

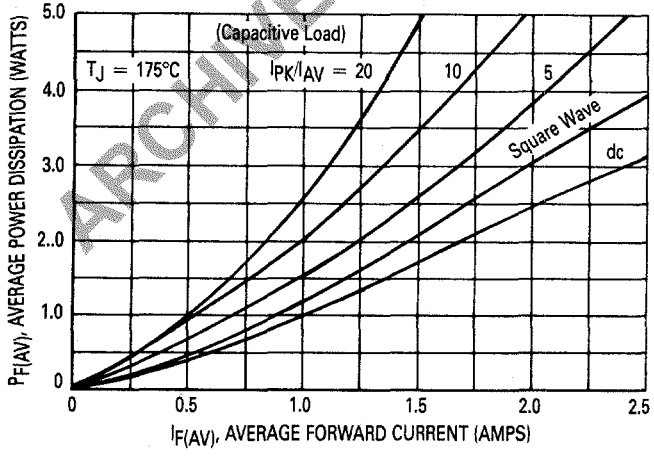
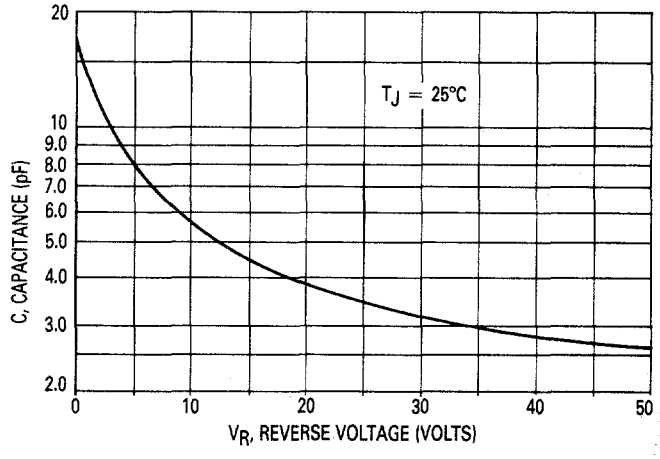


FIGURE 15 — TYPICAL CAPACITANCE



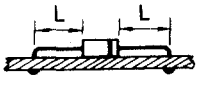
NOTE 1 — AMBIENT MOUNTING DATA

Data shown for thermal resistance junction-to-ambient ($R_{\theta JA}$) for the mountings shown is to be used as typical guideline values for preliminary engineering or in case the tie point temperature cannot be measured.

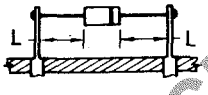
TYPICAL VALUES FOR $R_{\theta JA}$ IN STILL AIR

MOUNTING METHOD		LEAD LENGTH, L			UNITS
		1/8	1/4	1/2	
1	$R_{\theta JA}$	52	65	72	°C/W
2		67	80	87	°C/W
3		50			°C/W

MOUNTING METHOD 1

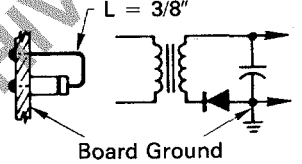


MOUNTING METHOD 2



Vector Pin Mounting

MOUNTING METHOD 3



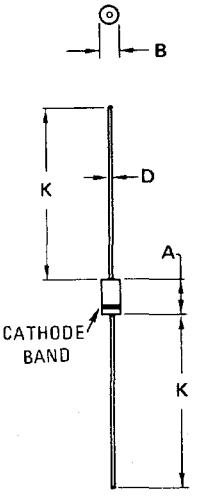
Board Ground Plane

P.C. Board with 1-1/2″ x 1-1/2″ Copper Surface

MECHANICAL CHARACTERISTICS

Case: Transfer Molded Plastic
Finish: External Leads are Plated, Leads are readily Solderable
Polarity: Indicated by Cathode Band
Weight: 1.1 Grams (Approximately)
Maximum Lead Temperature for Soldering Purposes: 240°C, 1/8″ from case for 10 seconds at 5.0 lbs. tension.

OUTLINE DIMENSIONS



	MILLIMETERS		INCHES	
DIM	MIN	MAX	MIN	MAX
A	5.97	6.60	0.235	0.260
B	2.79	3.05	0.110	0.120
D	0.76	0.86	0.030	0.034
K	27.94	–	1.100	–

CASE 59-04
PLASTIC PACKAGE

MOTOROLA *Semiconductor Products Inc.*

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