

**MOTOROLA**  
**SEMICONDUCTOR**  
 TECHNICAL DATA

## Switchmode Power Rectifiers

### DPAK Surface Mount Package

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

- Ultrafast 35 Nanosecond Recovery Time
- Low Forward Voltage Drop
- Low Leakage

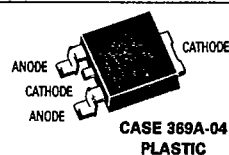
#### Mechanical Characteristics

- Case: Epoxy, Molded
- Finish: All External Surface Corrosion Resistance and Terminal Leads are Readily Solderable
- Lead Formed for Surface Mount
- Available in 16 mm Tape and Reel or Plastic Rails
- Compact Size
- Lead and Mounting Surface Temperature for Soldering Purpose 260°C Max. for 10 Seconds



**MURD305**  
**MURD310**  
**MURD315**  
**MURD320**

**ULTRAFAST**  
**RECTIFIERS**  
**3 AMPERES**  
**50 TO 200 VOLTS**



3

#### MAXIMUM RATINGS

Rating	Symbol	MURD				Unit
		305	310	315	320	
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V <sub>RRM</sub> V <sub>RWM</sub> V <sub>R</sub>	50	100	150	200	Volts
Average Rectified Forward Current (T <sub>C</sub> = 158°C, Rated V <sub>R</sub> )	I <sub>F(AV)</sub>	3				Amps
Peak Repetitive Forward Current (Rated V <sub>R</sub> , Square Wave, 20 kHz, T <sub>C</sub> = 158°C)	I <sub>FRM</sub>	6				Amps
Nonrepetitive Peak Surge Current (Surge applied at rated load conditions, halfwave, 60 Hz)	I <sub>FSM</sub>	75				Amps
Operating Junction and Storage Temperature	T <sub>J</sub> , T <sub>stg</sub>	-65 to +175				°C

#### THERMAL CHARACTERISTICS

Thermal Resistance, Junction to Case Junction to Ambient (1)	R <sub>θJC</sub> R <sub>θJA</sub>	6 80	°C/W

#### ELECTRICAL CHARACTERISTICS

Maximum Instantaneous Forward Voltage Drop (2) (I <sub>F</sub> = 3 Amps, T <sub>J</sub> = 25°C) (I <sub>F</sub> = 3 Amps, T <sub>J</sub> = 125°C)	v <sub>F</sub>	0.95 0.75	Volts
Maximum Instantaneous Reverse Current (2) (T <sub>J</sub> = 25°C, Rated dc Voltage) (T <sub>J</sub> = 125°C, Rated dc Voltage)	i <sub>R</sub>	5 500	μA
Maximum Reverse Recovery Time (I <sub>F</sub> = 1 Amp, di/dt = 50 Amps/μs, V <sub>R</sub> = 30 V, T <sub>J</sub> = 25°C) (I <sub>F</sub> = 0.5 Amp, i <sub>R</sub> = 1 Amp, I <sub>REC</sub> = 0.25 A, V <sub>R</sub> = 30 V, T <sub>J</sub> = 25°C)	t <sub>rr</sub>	35 25	ns

(1) Rating applies when surface mounted on the minimum pad sizes recommended.

(2) Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2%.

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MURD305, MURD310, MURD315, MURD320

TYPICAL CHARACTERISTICS

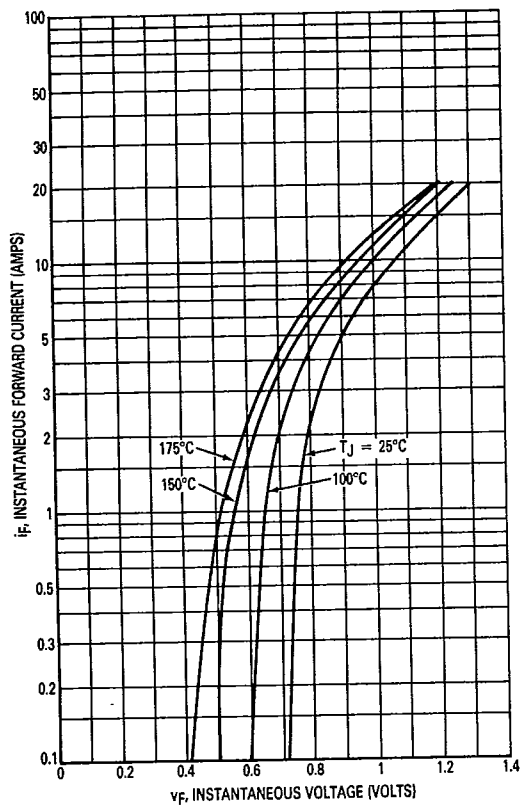
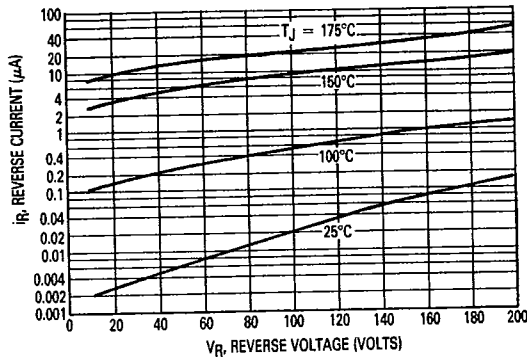


Figure 1. Typical Forward Voltage



\*The curves shown are typical for the highest voltage device in the voltage grouping. Typical reverse current for lower voltage selections can be estimated from these curves if  $V_R$  is sufficient below rated  $V_R$ .

Figure 2. Typical Reverse Current\*

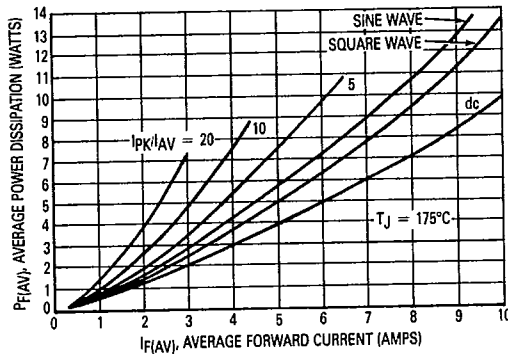


Figure 3. Average Power Dissipation

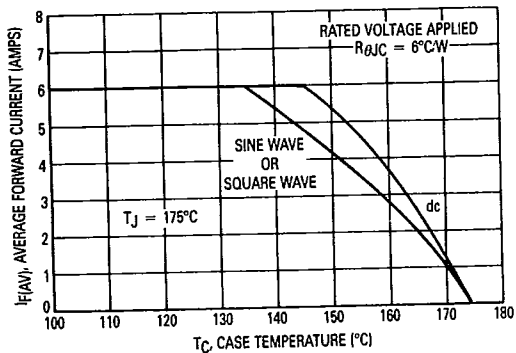


Figure 4. Current Derating, Case

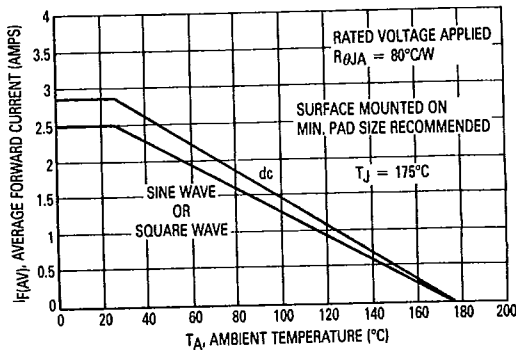


Figure 5. Current Derating, Ambient

MURD305, MURD310, MURD315, MURD320

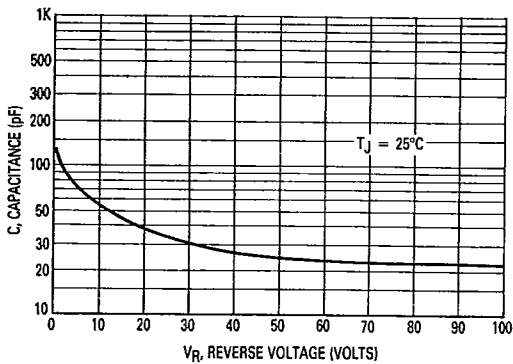
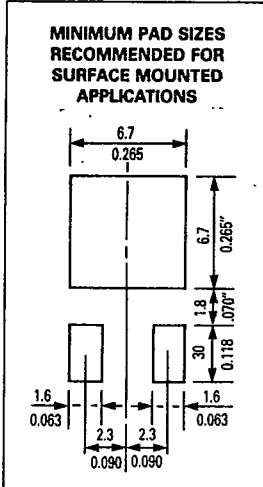
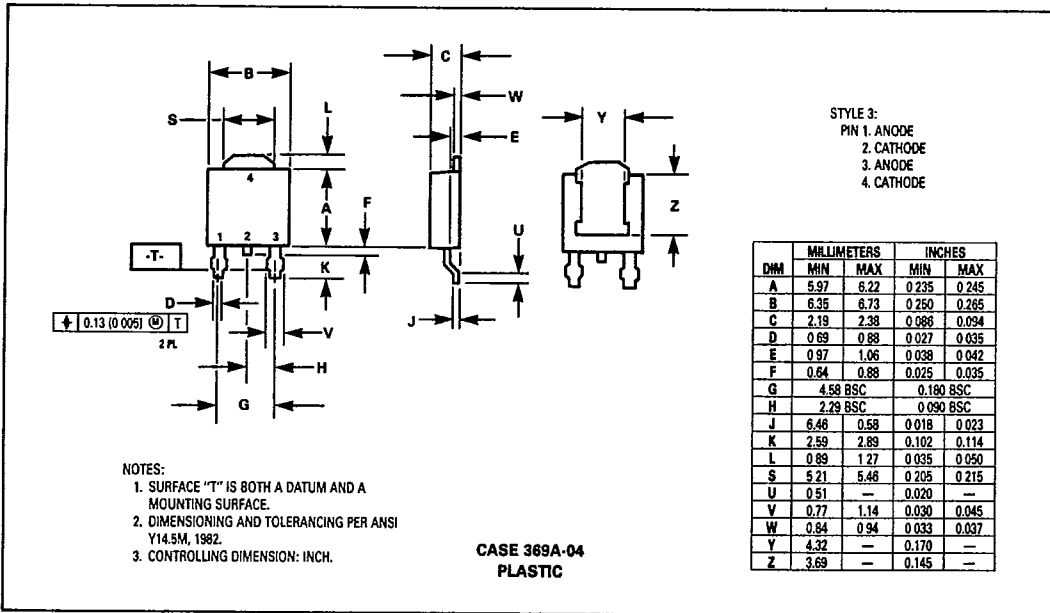


Figure 6. Typical Capacitance



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OUTLINE DIMENSIONS



# Tape and Reel Rectifier Products

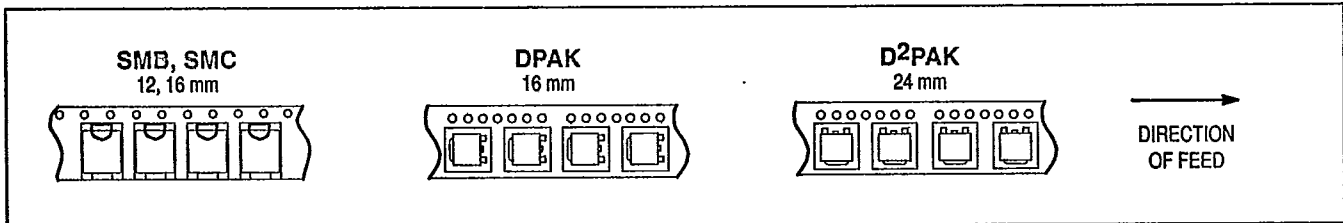
T-91-20

Embossed Tape and Reel is used to facilitate automatic pick and place equipment feed requirements. The tape is used as the shipping container for various products and requires a minimum of handling. The antistatic/conductive tape provides a secure cavity for the product when sealed with the "peel-back" cover tape.

- Reel Size Available, 13"
- Used for Automatic Pick and Place Feed Systems
- Minimizes Product Handling
- EIA 481A
- DPAK, SMC in 16 mm Tape
- D<sup>2</sup>PAK in 24 mm Tape

Use the standard device title and add the required suffix as listed in the option table below. Note that the individual reels have a finite number of devices depending on the type of product contained in the tape. Also note the minimum lot size is one full reel for each line item, and orders are required to be in increments of the single reel quantity. Minimum order \$200.00/line-line.

Package	Tape Width (mm)	Reel Size (Inch)	Reel Qty (MPQ)	Device Suffix
SMB	12	13	2500	T3
SMC	16	13	2500	T3
DPAK	16	13	1800	RL
	16	13	2500	T4
D <sup>2</sup> PAK	24	13	800	T4



## Solder Pad Geometries

