

### FEATURES

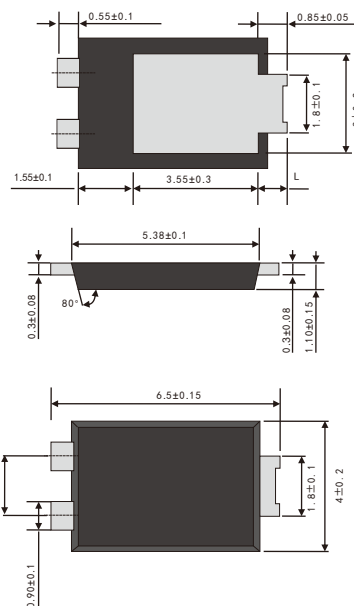
- Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- Ultrafast and soft recovery time for high efficiency
- Low VF ,Low power loss
- Polyimide passivation
- High surge capability
- High temperature soldering guaranteed:260°C/10 seconds at terminals
- Component in accordance to RoHS 2011/65/EU



RoHS  
COMPLIANT

HALOGEN  
FREE

### TO-277

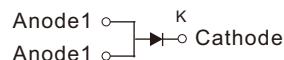


### MECHANICAL DATA

- Case: TO-277 molded plastic body
- Terminals: Plated axial leads, solderable per MIL-STD-750,method 2026
- Mounting Position: Any
- Weight: 0.092 grams (approx)

### TYPICAL APPLICATIONS

- For use in boost stage in SMPS
- high frequency inverters for solar inverters
- DC/DC converters
- high frequency output rectification of battery chargers
- free wheeling diodes in motor drivers



Dimensions in inches and (millimetres)

### MAXIMUM RATINGS

(Ratings at 25°C ambient temperature unless otherwise specified )

Parameter	Symbol	Value	Unit
Maximum repetitive peak reverse voltage	$V_{RRM}$	200	V
Maximum average forward rectified current	$I_{F(AV)}$	10.0	A
Peak forward surge current 8.3ms single half sine-wave superimposed on rated load (JEDEC method at rated $T_J$ )	$I_{FSM}$	150	A
Operating junction temperature range	$T_J$	-55 to +175	°C
Storage temperature range	$T_{STG}$	-55 to +175	°C

# RATINGS AND CHARACTERISTIC OF MURP1020

## ELECTRICAL CHARACTERISTICS (T<sub>J</sub>=25°C Unless otherwise noted)

Parameter	Test Conditions		Symbol	Min.	Typ.	Max.	Unit
Breakdown voltage Blocking voltage	I <sub>R</sub> =100μA		V <sub>BR</sub> V <sub>R</sub>	200	–	–	V
Instaneous forward voltage	T <sub>J</sub> =25°C	I <sub>F</sub> =1.0A	V <sub>F</sub> <sup>1)</sup>	–	0.70	–	V
		I <sub>F</sub> =6.0A		–	0.86	–	
		I <sub>F</sub> =10.0A		–	0.90	0.95	
	T <sub>J</sub> =125°C	I <sub>F</sub> =1.0A		–	0.55	–	
		I <sub>F</sub> =6.0A		–	0.72	–	
		I <sub>F</sub> =10.0A		–	0.78	–	
Reverse current	T <sub>J</sub> =25°C	V <sub>R</sub> =200V	I <sub>R</sub> <sup>2)</sup>	–	0.1	2	μA
	T <sub>J</sub> =100°C			–	1.0	–	μA
	T <sub>J</sub> =125°C			–	5	50	
Junction capacitance	4V, 1MHz		C <sub>J</sub>	–	110	–	pF

Notes: 1.Pulse test: 300 μs pulse width, 1% duty cycle

2.Pulse test: pulse width ≤ 40ms

## DYNAMIC RECOVERY CHARACTERISTICS (T<sub>J</sub>=25°C Unless otherwise noted)

Parameter	Test Conditions		Symbol	Min.	Typ.	Max.	Unit
Reverse recovery time	I <sub>F</sub> =1.0A, dI <sub>F</sub> /dt=1A/μs, V <sub>R</sub> =30V		t <sub>rr</sub>		22		ns
	T <sub>J</sub> =25°C	I <sub>F</sub> =6A dI <sub>F</sub> /dt=200A/μs V <sub>R</sub> =160V			22		
	T <sub>J</sub> =125°C				28		
Peak recovery current	T <sub>J</sub> =25°C		I <sub>F</sub> =6A dI <sub>F</sub> /dt=200A/μs V <sub>R</sub> =160V	I <sub>RRM</sub>		2.5	
	T <sub>J</sub> =125°C				5		
Reverse recovery charge	T <sub>J</sub> =25°C	I <sub>F</sub> =6A dI <sub>F</sub> /dt=200A/μs V <sub>R</sub> =160V	Q <sub>rr</sub>		28		nC
	T <sub>J</sub> =125°C				80		

# RATINGS AND CHARACTERISTIC OF MURP1020

## THERMAL CHARACTERISTICS

Parameter	Symbol	TO-277	Unit
Typical thermal resistance <sup>3)</sup>	R <sub>θJL</sub>	3.0	°C/W

3 Units mounted on recommended PCB 1 oz. Pad layout

## AVAILABLE PACK INFORMATION

Product code	Pack	Reel Size (mm)	Quantity (pcs/reel)	Box Size L×W×H (mm)	Quantity (reel/box)	Carton Size L×W×H (mm)	Quantity (box/carton)
MURP1020-TO-277	T/R	φ 330	5000	338×338×40	2	365×365×360	7

FIG.1-FORWARD CURRENT DERATING CURVE

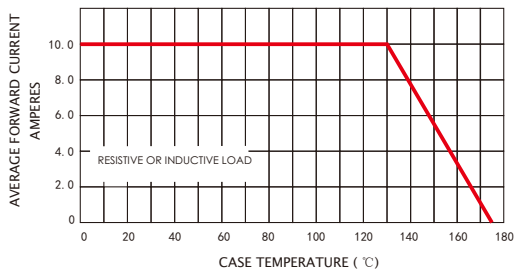
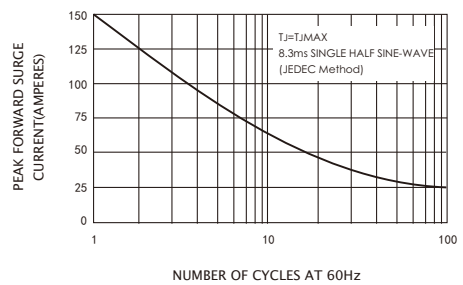


FIG.2-MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT



# RATINGS AND CHARACTERISTIC OF MURP1020

FIG.3-TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS

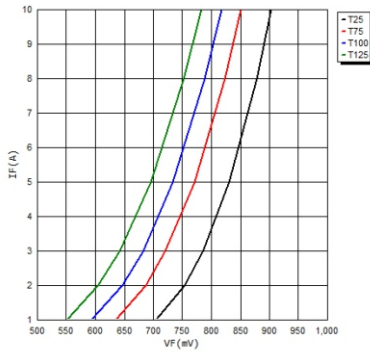


FIG.4-TYPICAL REVERSE CHARACTERISTICS

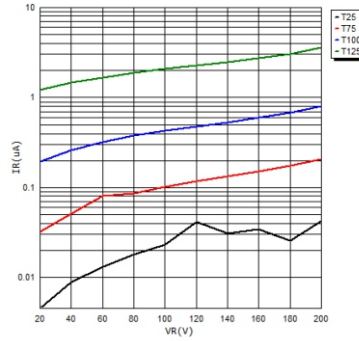


FIG.5-TYPICAL JUNCTION CAPACITANCE

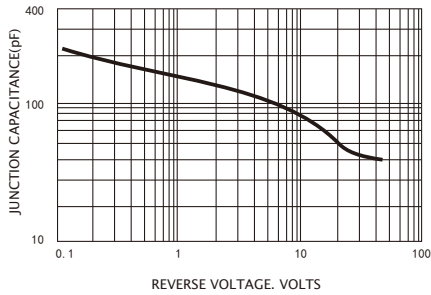


FIG.6- TYPICAL REVERSE RECOVERY TIME vs. di/dt

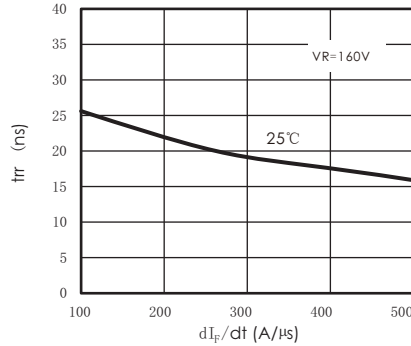


FIG.7- TYPICAL STORED CHARGE VS. di/dt

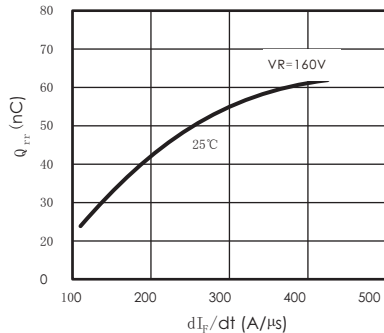
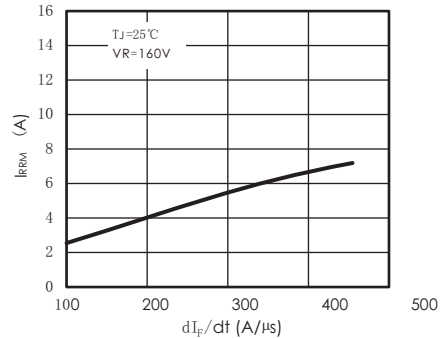
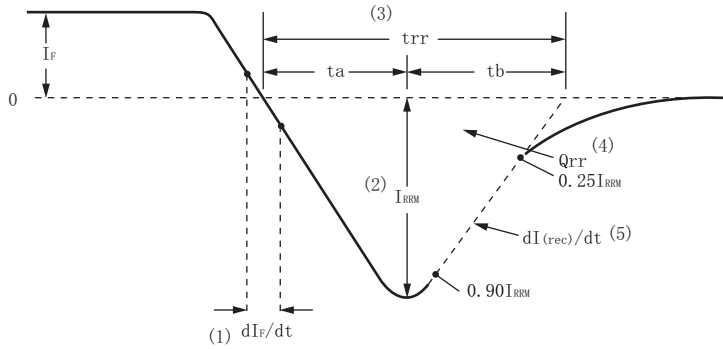


FIG.8- TYPICAL REVERSE RECOVERY CURRENT VS. di/dt



# RATINGS AND CHARACTERISTIC OF MURP1020



- (1)  $dI_F/dt$ -rate of change of current through zero crossing
- (2)  $I_{RRM}$ -peak reverse recovery current
- (3)  $t_{rr}$ - reverse recovery time measured from zero crossing point of negative going  $I_F$  to point where a line passing through  $0.90I_{RRM}$  and  $0.25I_{RRM}$  extrapolated to zero current
- (4)  $Q_{rr}$ - area under curve defined by  $t_{rr}$  and  $I_{RRM}$

$$Q_{rr} = \frac{t_{rr} \times I_{RRM}}{2}$$

- (5)  $dI_{(rec)}/dt$ -peak rate of change of current during  $t_b$  portion of  $t_{rr}$

Fig. 9 – Reverse Recovery Waveform and Definitions