

### 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 2011/863/EU

### MECHANICAL DATA

- Case: JEDEC TO-220AC, ITO-220AC, TO-263, TO-252 molded plastic body
- Terminals: Lead solderable per MIL-STD-750, method 2026
- Polarity: As marked
- Mounting Position: Any

### 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

### MAXIMUM RATINGS

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

Parameter	Symbol	Value	Unit
Maximum repetitive peak reverse voltage	$V_{RRM}$	1200	V
Maximum average forward rectified current	$I_{F(AV)}$	8.0	A
Peak forward surge current 8.3ms single half sine-wave superimposed on rated load (JEDEC method at rated $T_j$ )	$I_{FSM}$	80	A
Operating junction temperature range	$T_j$	-55 to +175	°C
Storage temperature range	$T_{stg}$	-55 to +175	°C

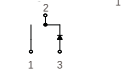
ITO-220AC  
MURF8120



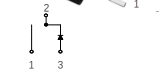
TO-220AC  
MUR8120



TO-252  
MUR8120M2



TO-263  
MUR8120D2



#### PRIMARY CHARACTERISTICS

$I_{F(AV)}$	8.0A
$V_R$	1200V
$I_{FSM}$	80A
$V_F$ at $I_F=8.0A, 125^\circ C$	1.60V
$T_{rr typ}$	42ns
$T_{MAX}$	175°C
Diode variation	Single die

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> =200μA		V <sub>BR</sub> V <sub>R</sub>	1200	-	-	V
Instaneous forward voltage	T <sub>J</sub> =25°C	I <sub>F</sub> =1.0A	V <sub>F</sub> <sup>1)</sup>	-	1.20	-	V
		I <sub>F</sub> =3.0A		-	1.50	-	
		I <sub>F</sub> =8.0A		-	1.90	2.35	
	T <sub>J</sub> =125°C	I <sub>F</sub> =1.0A		-	0.91	-	
		I <sub>F</sub> =3.0A		-	1.20	-	
		I <sub>F</sub> =8.0A		-	1.60	-	
Reverse current	T <sub>J</sub> =25°C	V <sub>R</sub> =1200V	I <sub>R</sub> <sup>2)</sup>	-	0.1	5	μ A
	T <sub>J</sub> =100°C			-	1.0	-	μ A
	T <sub>J</sub> =125°C			-	5	-	
Junction capacitance	4V,1MHz		C <sub>J</sub>	-	24	-	pF

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

2.Pulse test: pulse width ≤ 40ms

DYNAMIC RECOVERY CHARACTERISTICS

Parameter	Test Conditions		Symbol	Min.	Typ.	Max.	Unit
Reverse recovery time	I <sub>F</sub> =1.0A,dI <sub>F</sub> /dt=100A/μs,V <sub>R</sub> =30V		trr		42		ns
	T <sub>J</sub> =25°C	I <sub>F</sub> =8A dI <sub>F</sub> /dt=100A/μS V <sub>R</sub> =390V			150		
	T <sub>J</sub> =125°C				200		
Peak recovery current	T <sub>J</sub> =25°C		I <sub>RRM</sub>		3		A
	T <sub>J</sub> =125°C				5		
Reverse recovery charge	T <sub>J</sub> =25°C		Q <sub>rr</sub>		370		nC
	T <sub>J</sub> =125°C				745		

## THERMAL CHARACTERISTICS

Parameter	Symbol	TO-263, TO-252, TO-220AC	ITO-220AC	Unit
Typical thermal resistance	R <sub>θjc</sub>	2.5	4.5	°C/W

3. Thermal resistance from junction to case

## AVAILABLE PACK INFORMATION

Product code	Pack	Carton Size L×W×H(mm)	Inner Box Size L×W×H(mm)	Tube Length (mm)	Inner Box Number	Tube Number Per A Inner Box	Part Number Per A Tube	Quantity(carton) (K)
MUR8120-TO-220AC	Tube	565×225×170	548×151×37	540	5	20	50	5
MURF8120-ITO-220AC	Tube	565×225×170	548×151×37	540	5	20	50	5
MUR8120D2-TO-263	Tube	565×225×170	548×151×37	538	5	20	50	5
MUR8120M2-TO-252	Tube	565×225×170	548×151×37	520	5	60	75	22.5
Product code	Pack	Carton Size L×W×H(mm)	Inner Box Size L×W×H(mm)	Reel Diameter (mm)	Inner Box Number	Reel Number Per A Inner Box	Part Number Per A Reel	Quantity(carton) (K)
MUR8120D2-TO-263	Reel	364×364×235	330×330×38	φ330	5	1	800	4
MUR8120M2-TO-252	Reel	364×364×235	346×346×23	φ330	8	1	2500	20

FIG.1- FORWARD CURRENT DERATING CURVE

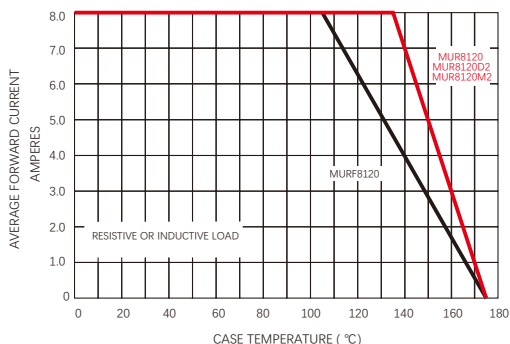


FIG.2- MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

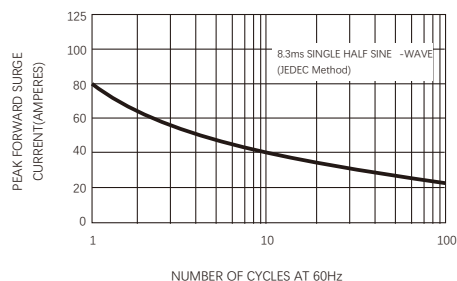


FIG.3-TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS

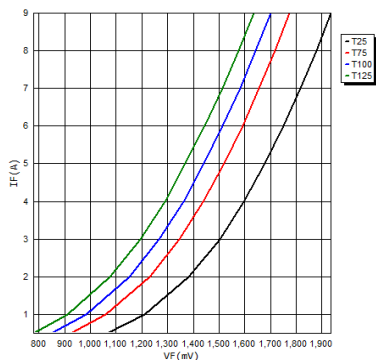


FIG.4-TYPICAL REVERSE CHARACTERISTICS

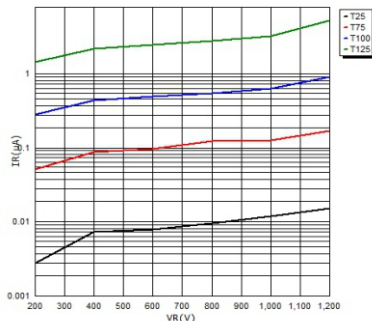


FIG.5-TYPICAL JUNCTION CAPACITANCE

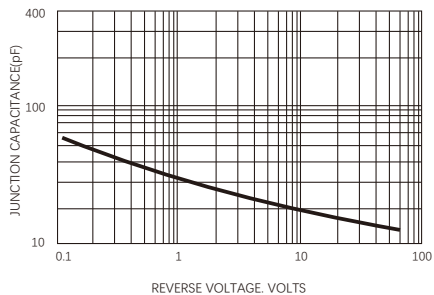


FIG.6- TYPICAL REVERSE RECOVERY TIME vs.  $dI_f/dt$

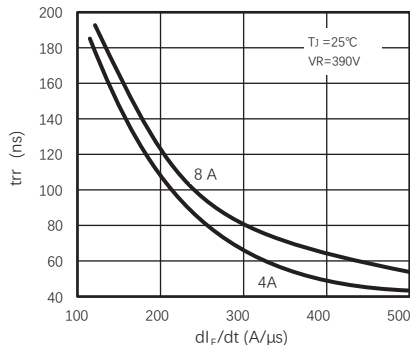


FIG.7- TYPICAL STORED CHARGE VS.  $dI_f/dt$

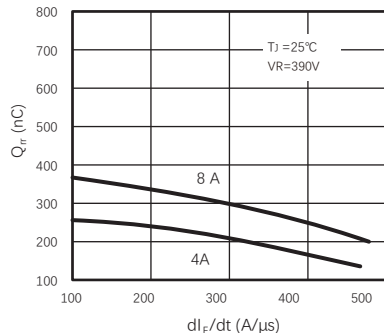
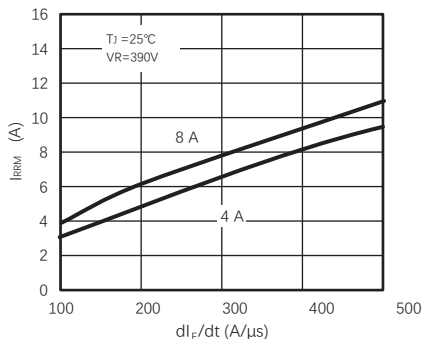
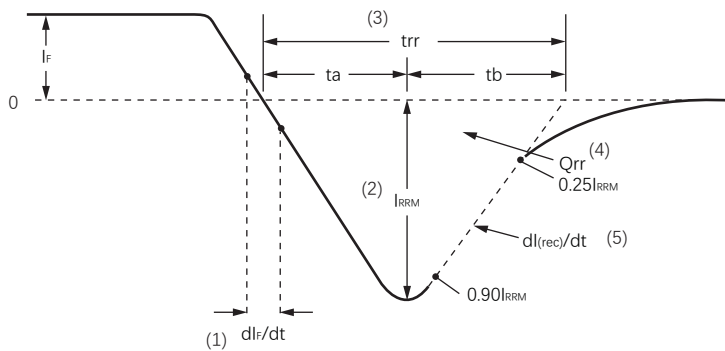


FIG.8- TYPICAL REVERSE RECOVERY CURRENT VS.  $dI_f/dt$





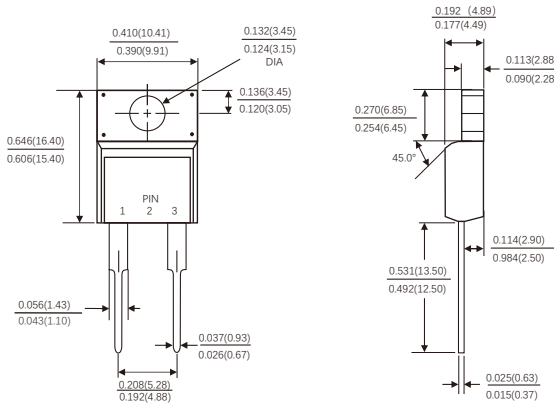
- (1)  $dl/dt$ -rate of change of current through zero crossing
- (2)  $I_{RRM}$ -peak reverse recovery current
- (3)  $t_{rr}$ - reverse recovery time measured from zero crossing point of negative going  $I_F$  to point where a line passing through  $0.90I_{RRM}$  and  $0.25I_{RRM}$  extrapolated to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

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

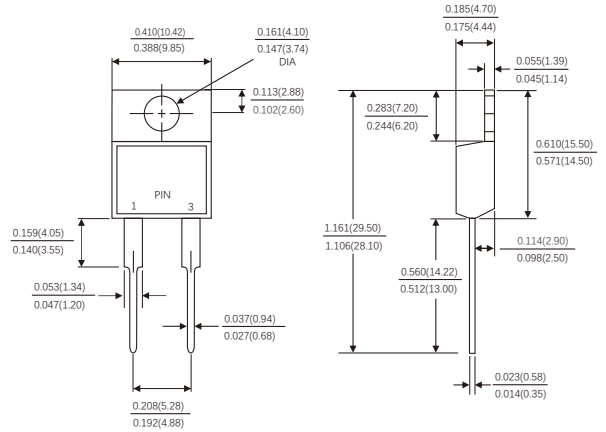
- (5)  $dl_{(rec)}/dt$ -peak rate of change of current during  $t_b$  portion of  $t_{rr}$

Fig.9 - Reverse Recovery Waveform and Definitions

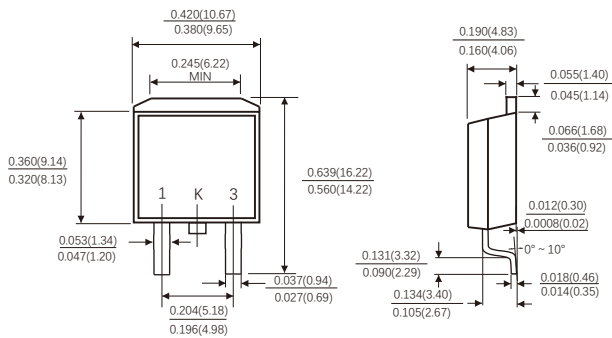
ITO-220AC



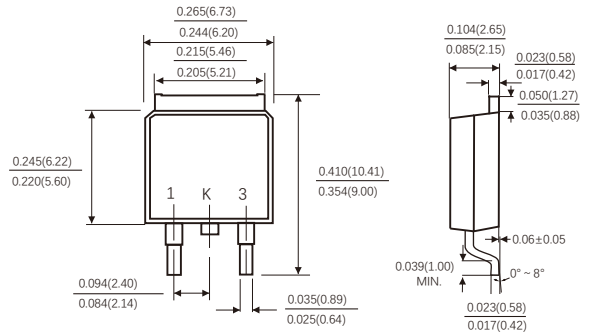
TO-220AC



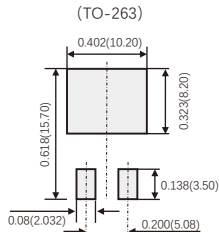
TO-263



TO-252



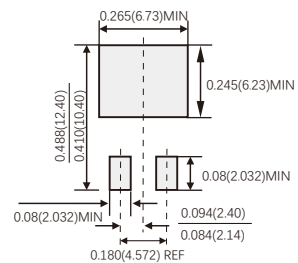
Suggested Pad Layout



(设计者可参考推荐值根据焊接工艺要求自行确定适合的焊盘尺寸)  
(Designers can refer to the recommended values according to the manufacturing process requirements to determine the appropriate pad size)

Suggested Pad Layout

(TO-252)



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