

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
- Meets JESD 201 class 2 whisker test
- High temperature soldering guaranteed: 260°C/10s at terminals
- Component in accordance to RoHS 2011/65/EU

MECHANICAL DATA

- Case: JEDEC TO-220AC, ITO-220AC, TO-263
- Molding compound meets UL94V-0 flammability rating
- Terminals: Lead solderable per J-STD-002 and JESD22-B102
- Polarity: As marked
- Mounting Torque: 10 in-lbs maximum

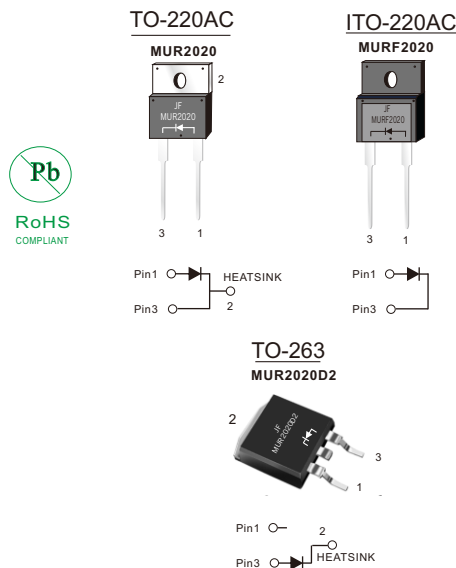
TYPICAL APPLICATIONS

- 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}	200	V
Maximum average forward rectified current (see fig.1)	I _{F(AV)}	20.0	A
Surge non repetitive forward current tp=10ms sinusoidal	I _{FSM}	200	A
Maximum operating junction temperature	T _J	175	°C
Storage temperature range	T _{stg}	-55 to +175	°C



PRIMARY CHARACTERISTICS	
I _{F(AV)}	20A
V _{RRM}	200V
I _{FSM}	200A
V _F at I _F =20.0A (125°C)	0.85V
I _r	2 μ A
T _J (MAX)	175°C
Diode variations	Single Chip

RATINGS AND CHARACTERISTIC OF MUR2020,MURF2020,MUR2020D2

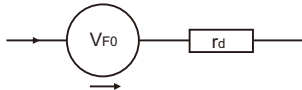
ELECTRICAL CHARACTERISTICS (T_A=25°C Unless otherwise noted)

Parameter	Test Conditions		Symbol	Min.	Typ.	Max.	Unit
Breakdown voltage Blocking voltage	I _R =200 μA		V _{BR} V _R	200	–	–	V
Instaneous forward voltage	T _J =25°C	I _F =5A	V _F ¹⁾	–	0.82	–	V
		I _F =15A		–	0.95	–	
		I _F =20A		–	0.98	1.10	
	T _J =125°C	I _F =5A		–	0.64	–	
		I _F =15A		–	0.79	–	
		I _F =20A		–	0.85	–	
Reverse current	T _J =25°C	V _R =200V	I _R ²⁾	–	0.1	2.0	μA
	T _J =100°C			–	1.5	–	μA
	T _J =125°C			–	7.5	–	
Junction capacitance	4V,1MHz		C _J	–	120	–	pF

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

2.Pulse test: pulse width≤40ms

Equivalent circuits for forward power loss calculation



V_{F0}: threshold voltage 0.78V

r_d: Dynamic resistance 0.0125Ω

Forward power loss of diode = V_{F0} × I_{F(AV)} + r_d × I_{F(RMS)}²

DYNAMIC RECOVERY CHARACTERISTICS (T_J=25°C)

Parameters	Test Conditions	Symbol	Min.	Typ.	Max.	Units
Reverse recovery time	I _F =0.5A, I _R =1A, I _{RR} =0.25A	trr	–	–	25	ns
	I _F =1A, dI _F /dt=–100A/μs, V _R =30V		–	21	35	ns

RATINGS AND CHARACTERISTIC OF MUR2020,MURF2020,MUR2020D2

THERMAL CHARACTERISTICS

Parameter	Symbol	MUR2020	MURF2020	MUR2020D2	Unit
Typical thermal resistance ³⁾	$R_{\theta jc}$	1.3	3.5	1.3	$^{\circ}\text{C}/\text{W}$

3. Thermal resistance from junction to case

AVAILABLE PACK INFORMATION

Product code	Pack	Box Size L×W×H (mm)	Quantity (pcs/box)	Carton Size L×W×H (mm)	Quantity (box/carton)
MUR2020-T0-220AC	P/T	558×148×38	1000	565×225×170	5
MURF2020-IT0-220AC	P/T	558×148×38	1000	565×225×170	5
MUR2020D2-T0-263	P/T	558×148×38	1000	565×225×170	5

FIG.1-Conduction losses versus average current (per diode)

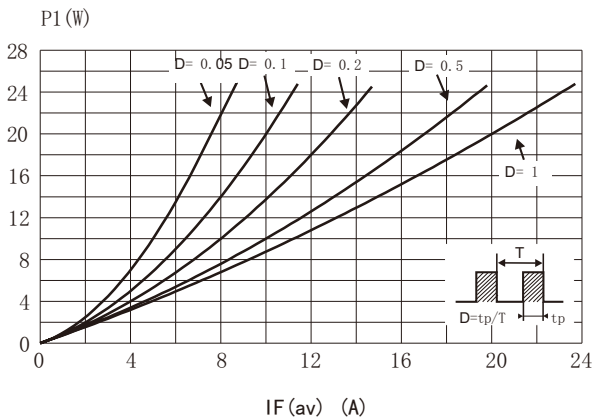
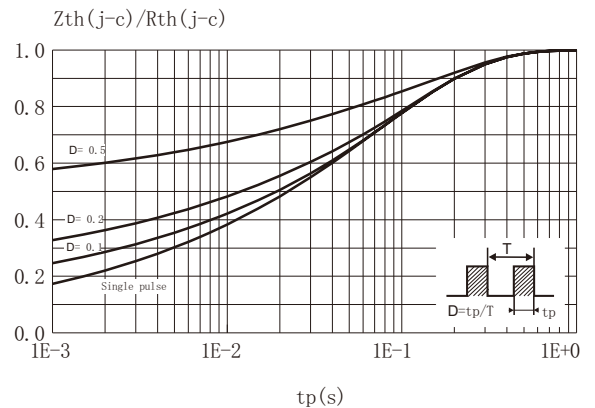
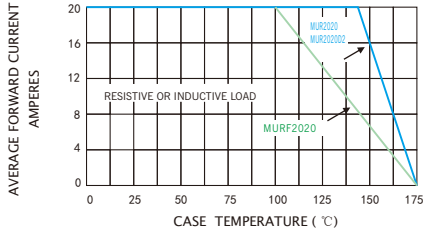


FIG.2-Relative variation of thermal impedance Junction to case versus pulse duration



RATINGS AND CHARACTERISTIC OF MUR2020,MURF2020,MUR2020D2

FIG.3-FORWARD CURRENT DERATING CURVE



注：曲线拐点温度值由公式 $T_{JMAX} - V_f @ (I_f(AV), 25^{\circ}C) \times I_f(AV) \times R_{\theta JC}$ 计算得出，设计时曲线仅供参考

FIG.4-MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

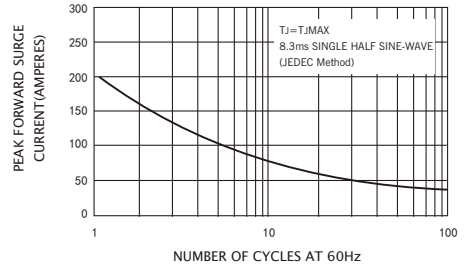


FIG.5-TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS

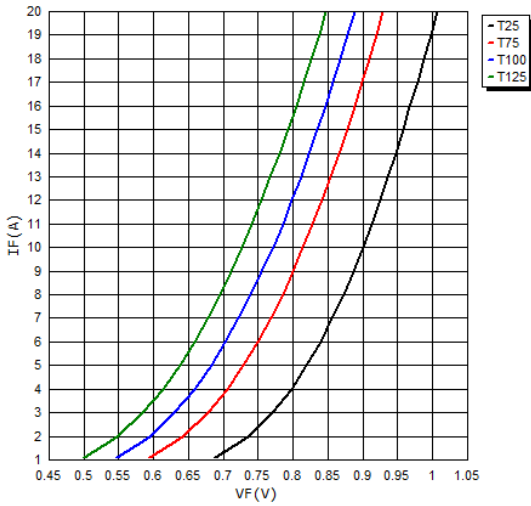
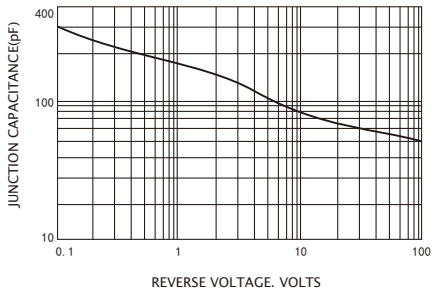
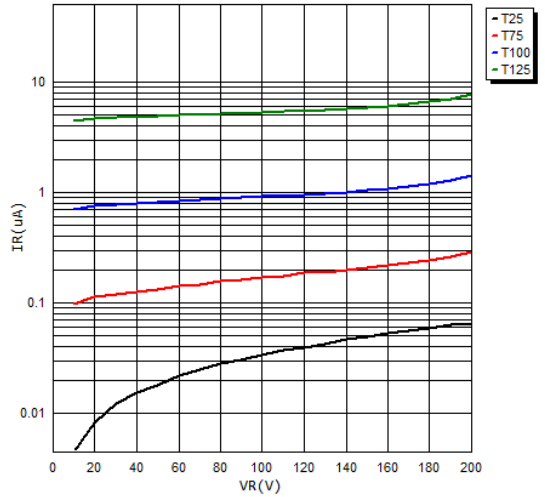


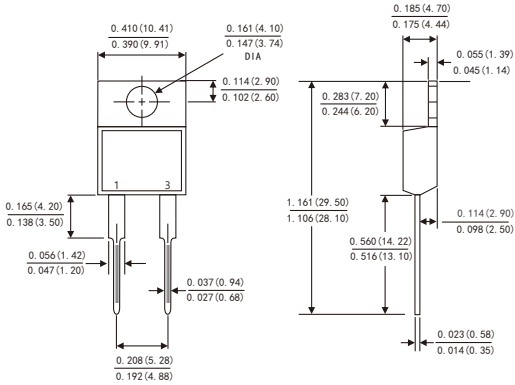
FIG.6-TYPICAL REVERSE CHARACTERISTICS



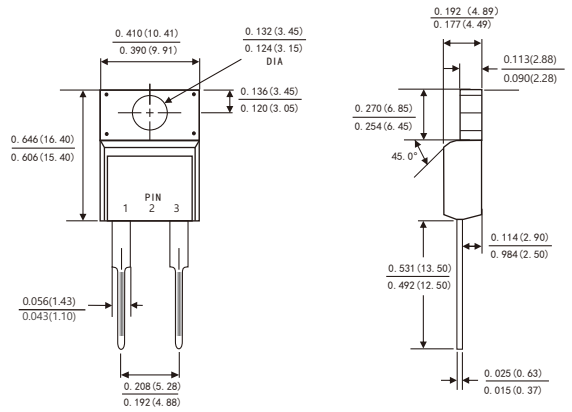
PACKAGE OUTLINE DIMENSIONS

Dimensions in inches and (millimeters)

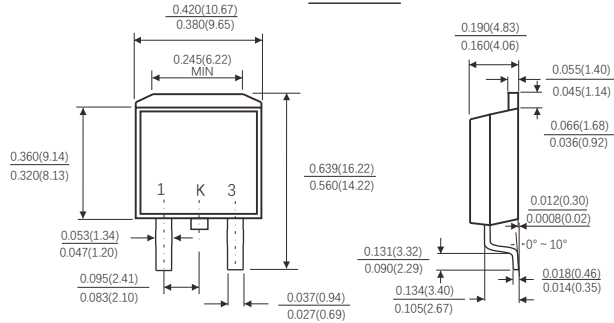
TO-220AC



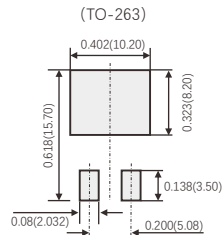
ITO-220AC



TO-263



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)

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