

### FEATURES

- Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- Ultrafast and soft recovery time for high efficiency
- Low  $V_F$ , 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 2015/863/EU

### MECHANICAL DATA

- Case: JEDEC TO-220AB、ITO-220AB、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

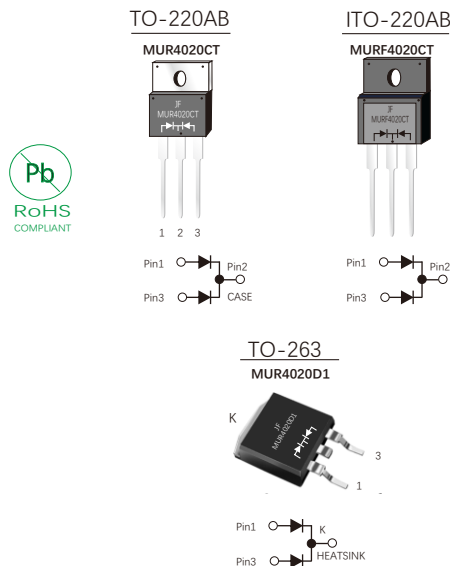
### TYPICAL APPLICATIONS

- 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)	Per leg	$I_F(AV)$	20.0	A
	Total device		40.0	
Surge non repetitive forward current $t_p=10ms$ sinusoidal		$I_{FSM}$	300	A
Maximum operating junction temperature		$T_J$	175	°C
Storage temperature range		$T_{stg}$	-65 to +175	°C



PRIMARY CHARACTERISTICS	
$I_F(AV)$	2*20A
$V_{RRM}$	200V
$I_{FSM}$	300A
$V_F$ at $I_F=20.0A(125^\circ C)$	0.85V
$I_R$	2μA
$T_J(MAX)$	175°C
Diode variations	Common cathode

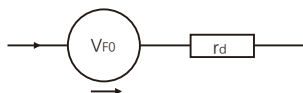
## ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C Unless otherwise noted)

Parameter	Test Conditions		Symbol	Min.	Typ.	Max.	Unit
Breakdown voltage Blocking voltage	IR=200μA		$V_{BR}$ $V_R$	200	-	-	V
Instaneous forward voltage	Tj=25°C	IF=5A	$V_F$ 1)	-	0.82	-	V
		IF=15A		-	0.95	-	
		IF=20A		-	0.98	1.10	
	Tj=125°C	IF=5A		-	0.64	-	
		IF=15A		-	0.79	-	
		IF=20A		-	0.85	-	
Reverse current	Tj=25°C	VR=200V	$I_R$ 2)	-	0.1	2.0	μA
	Tj=100°C			-	1.5	-	μA
	Tj=125°C			-	7.5	-	
Junction capacitance	4V,1MHz		Cj	-	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<sub>F0</sub>: threshold voltage 0.78V

r<sub>d</sub>: Dynamic resistance 0.0125Ω

Forward power loss of diode=V<sub>F0</sub>×I<sub>F(AV)</sub>+r<sub>d</sub>×I<sub>F(RMS)</sub><sup>2</sup>

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

Parameters	Test Conditions	Symbol	Min.	Typ.	Max.	Units
Reverse recovery time	I <sub>F</sub> =0.5A,I <sub>R</sub> =1A,I <sub>RR</sub> =0.25A	t <sub>rr</sub>	-	-	30	ns
	I <sub>F</sub> =1A,dI <sub>F</sub> /dt=-100A/μs,V <sub>R</sub> =30V		-	21	35	ns

## THERMAL CHARACTERISTICS

Parameter	Symbol	MUR4020CT	MURF4020CT	MUR4020D1	Unit
Typical thermal resistance <sup>3)</sup>	$R_{\theta jc}$	1.3	3.5	1.3	$^{\circ}\text{C}/\text{W}$

3.Thermal resistance from junction to case

## AVAILABLE PACK INFORMATION

Product code	Pack	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)
MUR4020CT-TO-220AB	Tube	565×225×170	548×151×37	540	5	20	50	5
MURF4020CT-ITO-220AB	Tube	565×225×170	548×151×37	540	5	20	50	5
MUR4020D1 TO-263	Tube	565×225×170	548×151×37	538	5	20	50	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)
MUR4020D1 TO-263	Reel	364×364×235	330×330×38	φ330	5	1	800	4

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

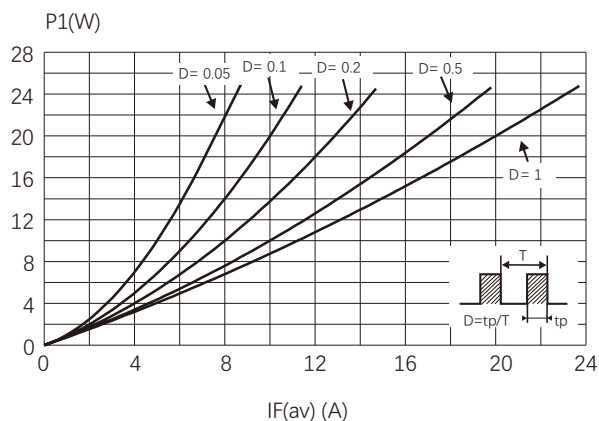


FIG.2-Relative variation of thermal impedance Junction to case versus pulse duration

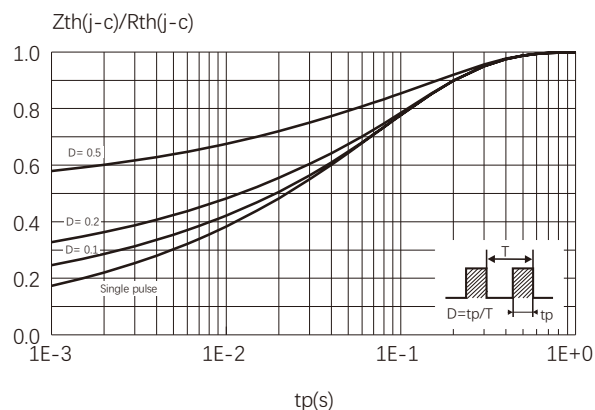


FIG.3-FORWARD CURRENT DERATING CURVE

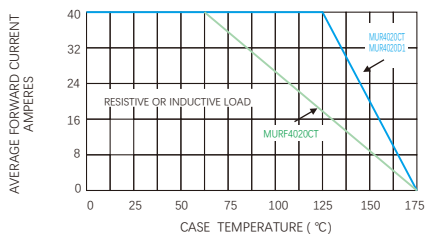


FIG.4-MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

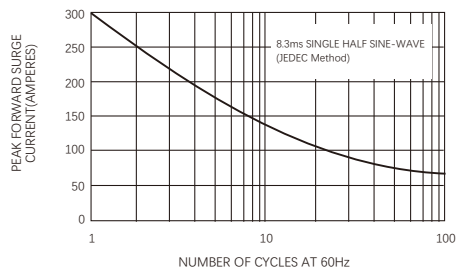


FIG.5-TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS

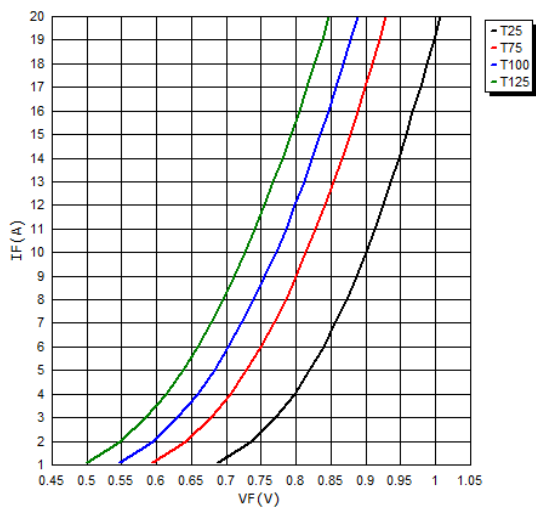
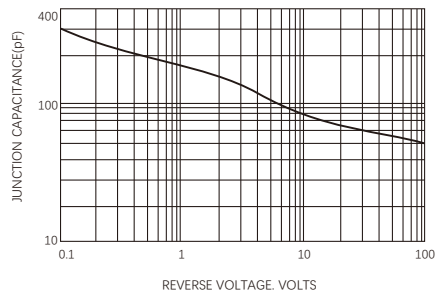
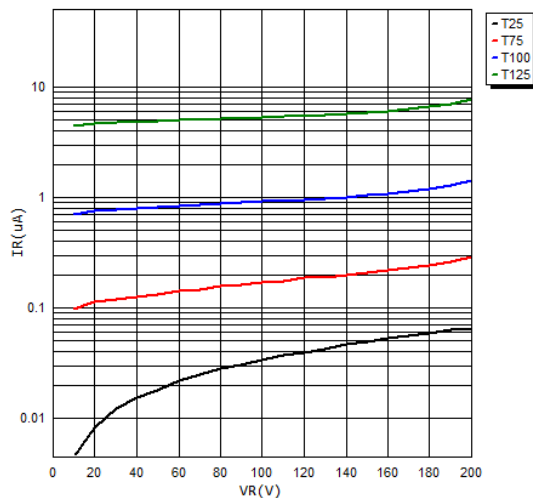


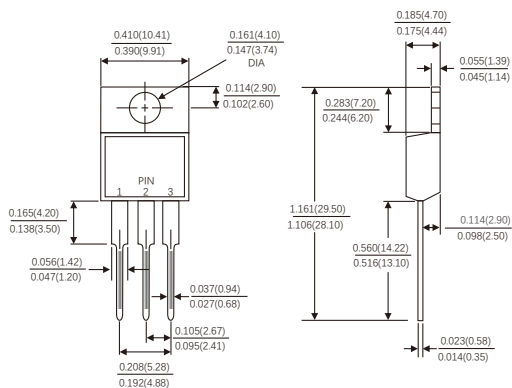
FIG.6-TYPICAL REVERSE CHARACTERISTICS



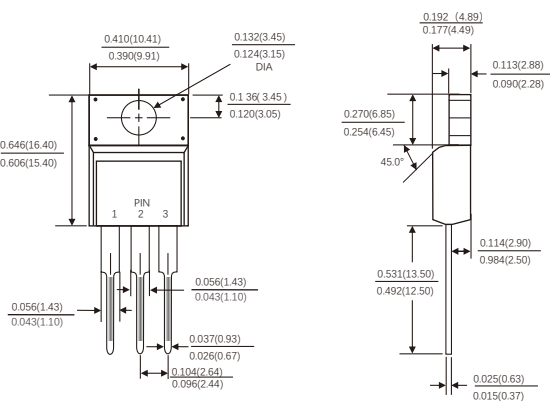
# PACKAGE OUTLINE DIMENSIONS

Dimensions in inches and (millimeters)

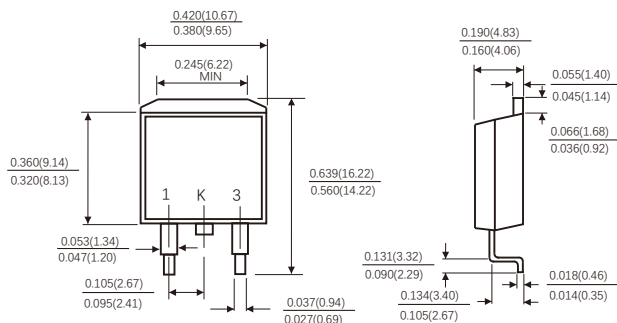
## TO-220AB



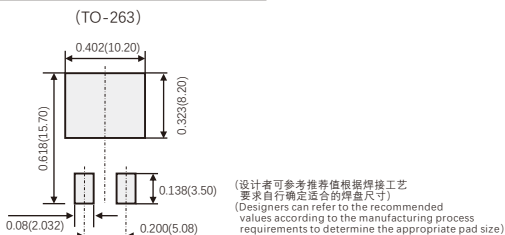
## ITO-220AB



## TO-263



## Suggested Pad Layout



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