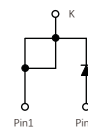


## FEATURES

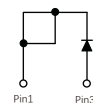
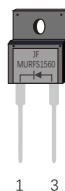
- Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- Ultrafast Recovery Characteristics
- Low forward voltage drop
- Low Reverse Leakage Current
- Soft Recovery Characteristics
- High temperature soldering guaranteed:260°C/10 seconds,
- 0.25"(6.35mm)from case
- Component in accordance to RoHS 2015/863/EU



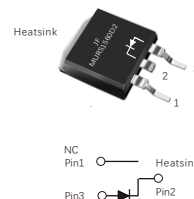
TO-220AC



ITO-220AC



TO-263



## MECHANICAL DATA

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

## TYPICAL APPLICATIONS

- Anti-Parallel Diode
  - Switching Power Supply
  - Inverters
- Free wheeling Diode
  - Motor Controller
  - Converters
  - Inverters
- PFC
- Snubber,Clamp diode

### PRIMARY CHARACTERISTICS

$I_F(AV)$	15.0A
$V_R$	600V
$I_{FSM}$	150A
$V_F$ at $I_F=15.0A, 125^\circ C$	1.40V
$T_{rr typ}$	24ns
$T_{JMAX}$	175°C
Diode variation	Single die

## MAXIMUM RATINGS

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

Parameter	Symbol	Value	Unit
Maximum repetitive peak reverse voltage	$V_{RRM}$	600	V
Maximum average forward rectified current	$I_F(AV)$	15.0	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

## 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		VBR VR	600	-	-	V
Instaneous forward voltage	T <sub>J</sub> =25°C	I <sub>F</sub> =1.0A	V <sub>F</sub> <sup>1)</sup>	-	1.10	-	V
		I <sub>F</sub> =5.0A		-	1.70	-	
		I <sub>F</sub> =15.0A		-	1.90	2.50	
	T <sub>J</sub> =125°C	I <sub>F</sub> =1.0A		-	0.65	-	
		I <sub>F</sub> =5.0A		-	1.00	-	
		I <sub>F</sub> =15.0A		-	1.40	-	
Reverse current	T <sub>J</sub> =25°C	V <sub>R</sub> =600V	I <sub>R</sub> <sup>2)</sup>	-	-	5.0	μA
	T <sub>J</sub> =100°C			-	-	50	μA
	T <sub>J</sub> =125°C			-	-	100	
Junction capacitance	4V,1MHz		C <sub>J</sub>	-	253	-	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> =0.5A,I <sub>R</sub> =1.0A, I <sub>rr</sub> =0.25A		trr	-	24	30	ns
	T <sub>J</sub> =25°C	I <sub>F</sub> =7.5A dI <sub>F</sub> /dt=200A/μS V <sub>R</sub> =400V		-	38	-	
	T <sub>J</sub> =125°C			-	57	-	
Peak recovery current	T <sub>J</sub> =25°C		I <sub>RRM</sub>	-	2.8	-	A
	T <sub>J</sub> =125°C			-	4.6	-	
Reverse recovery charge	T <sub>J</sub> =25°C		Q <sub>rr</sub>	-	50	-	nC
	T <sub>J</sub> =125°C			-	105	-	

## THERMAL CHARACTERISTICS

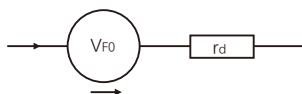
Parameter	Symbol	TO-220AC	ITO-220AC	TO-263	Unit
Typical thermal resistance <sup>3)</sup>	$R_{\theta JC}$	1.3	3.2	1.3	°C/W

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)
MURS1560- TO-220AC	Tube	565×225×170	548×151×37	540	5	20	50	5
MURFS1560- ITO-220AC	Tube	565×225×170	548×151×37	540	5	20	50	5
MURS1560D2 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)
MURS1560D2 TO-263	Reel	364×364×235	330×330×38	φ330	5	1	800	4

## Equivalent circuits for power loss calculation



$V_{F0}$ : threshold voltage 1.15V

$r_d$ : Dynamic resistance 0.06Ω

Forward power loss of diode= $V_{F0} \times I_F(AV) + r_d \times I_F(RMS)^2$

FIG.1-FORWARD CURRENT DERATING CURVE

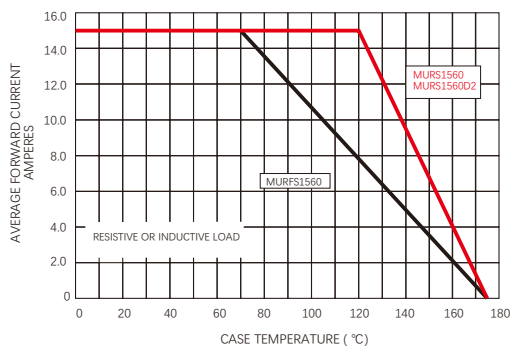


FIG.2-MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

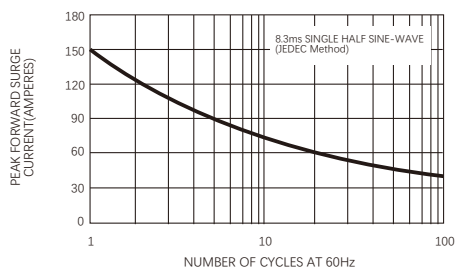


FIG.3-TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS

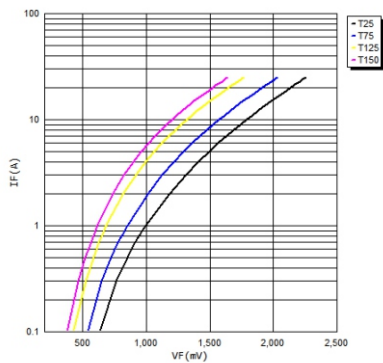


FIG.4-TYPICAL REVERSE CHARACTERISTICS

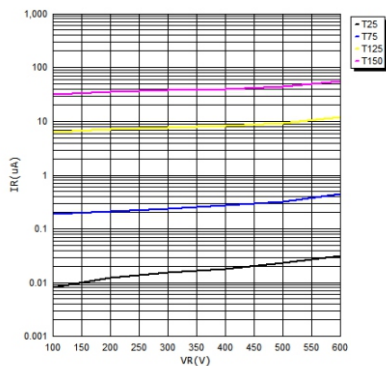


FIG.5-TYPICAL JUNCTION CAPACITANCE

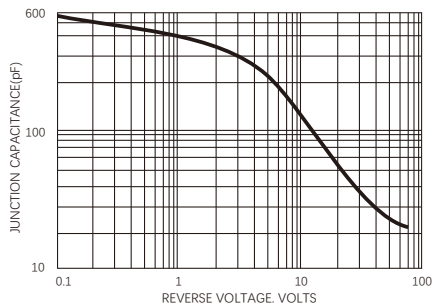


FIG.6-TYPICAL  $t_{rr}, t_a, t_b$  vs. FORWARD CURRENT ( $T_j=25^\circ\text{C}$ )

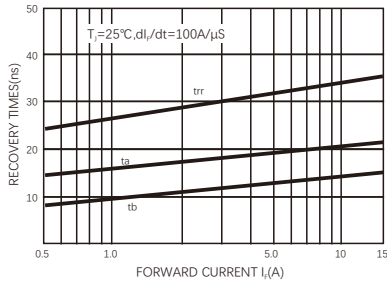
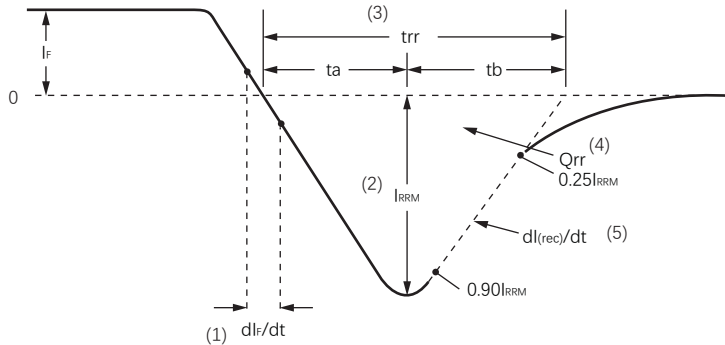
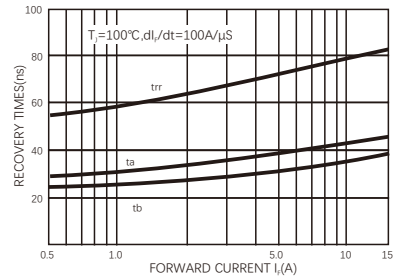


FIG.7-TYPICAL  $t_{rr}, t_a, t_b$  vs. FORWARD CURRENT ( $T_j=100^\circ\text{C}$ )



- (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  $I_{RRM}$

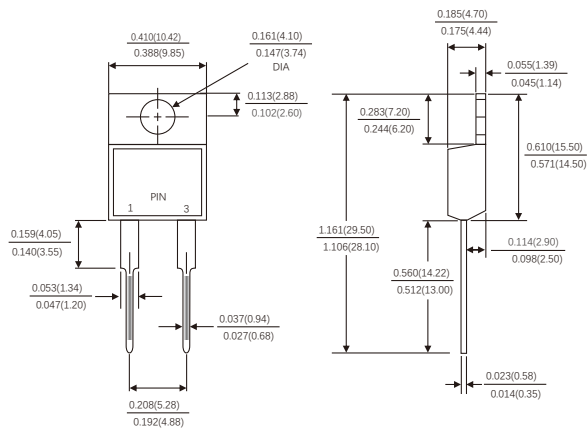
$$Q_{rr} = \frac{t_{rr} \times I_{RRM}}{2}$$

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

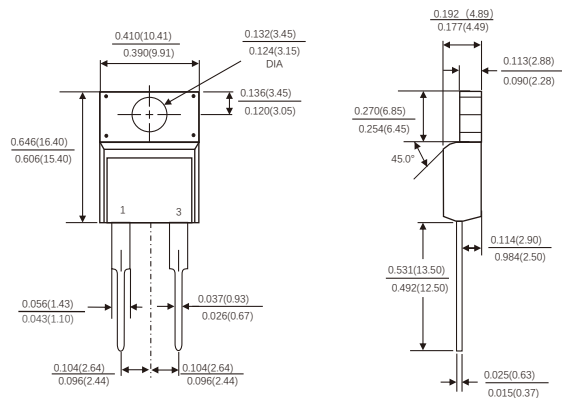
Fig.8 - Reverse Recovery Waveform and Definitions

Dimensions in inches and (millimeters)

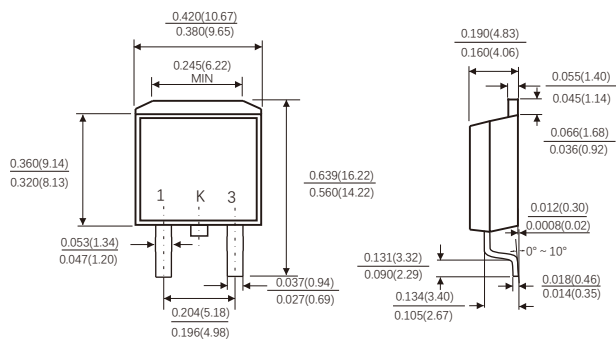
## TO-220AC



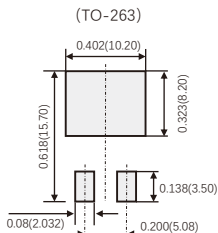
## ITO-220AC



## TO-263



## Suggested Pad Layout



(对于TO263, 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)  
(For TO-263, Designers can refer to the recommended values according to the manufacturing process requirements to determine the appropriate pad size)

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