SEMICONDUCTOR

MURS1560 MURFS1560 MURS1560D2

POLYIMIDE PASSIVATED SUPER FAST RECTIFIER

Reverse Voltage - 600 Volts
Forward Current - 15.0Amperes

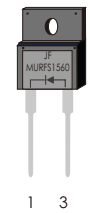
FEATURES

- 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 2011/65/EU

RoHS COMPLIANT

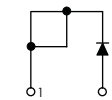
TO-220AC

ITO-220AC



TO-263

Base cathode



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℃	1. 40V
Trr typ	24ns
T_{JMAX}	175℃
Diode variation	Sigle die

MAXIMUM RATINGS

(Ratings at 25℃ 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_L)	I_{FSM}	150	A
Operating junction temperature range	T_J	-55 to+175	℃
Storage temperature range	T_{stg}	-55 to+175	℃

RATINGS AND CHARACTERISTIC OF MURS1560/MURFS1560/MURS1560D2

ELECTRICAL CHARACTERISTCS（T_J=25℃ Unless otherwise noted）

Parameter	Test Conditions		Symbol	Min.	Typ.	Max.	Unit
Breakdown voltage Blocking voltage	IR=200μA		V_{BR} V_R	600	–	–	V
Instaneous forward voltage	T_J=25℃	I_F=1.0A	V_F 1)	–	1.10	–	V
		I_F=5.0A		–	1.70	–	
		I_F=15.0A		–	1.90	2.50	
	T_J=125℃	I_F=1.0A		–	0.65	–	
		I_F=5.0A		–	1.00	–	
		I_F=15.0A		–	1.40	–	
Reverse current	T_J=25℃	V_R=600V	I_R 2)	–	2.0	5	μA
	T_J=100℃			–	30	150	μA
	T_J=125℃			–	100	500	
Junction capacitance	4V,1MHz		C_J	–	75	–	pF

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

2.Pulse test: pulse width≤40ms

DYNAMIC RECOVERY CHARACTERISTCS（T_J=25℃ Unless otherwise noted）

Parameter	Test Conditions		Symbol	Min.	Typ.	Max.	Unit
Reverse recovery time	I_F=0.5A,I_R=1.0A, Irr=0.25A		trr	–	24	30	ns
	T_J=25℃	I_F=7.5A dI_F/dt=200A/μS V_R=400V		–	38	–	
	T_J=125℃			–	57	–	
Peak recovery current	T_J=25℃		I_{RRM}	–	2.8	–	A
	T_J=125℃			–	4.6	–	
Reverse recovery charge	T_J=25℃		Qrr	–	50	–	nc
	T_J=125℃			–	105	–	

RATINGS AND CHARACTERISTIC OF MURS1560/MURFS1560/MURS1560D2

THERMAL CHARACTERISTCS

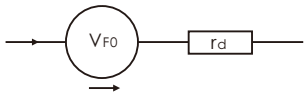
Parameter	Symbol	TO-220AC TO-263	ITO-220AC	Unit
Typical thermal resistance 3)	$R_{\theta JC}$	2.5	4.5	℃/W

3.Thermal resistance from junction to case

AVAILABALE PACK INFORMATION

Product code	Pack	Box Size L×W×H(mm)	Quantity(pcs/box)	Carton SizeL×W×H(mm)	Quantity(box/carton)
MURS1560-TO-220AC	P/T	558×148×38	1000	565×225×170	5
MURFS1560-ITO-220AC	P/T	558×148×38	1000	565×225×170	5
MURFS1560D2-TO-263	P/T	558×148×38	1000	565×225×170	5

Equivalent circuits for power loss calculation



V_{f0}: threshold voltage 1.15V
r_d: Dynamic resistance 0.06Ω
Forward power loss of diode=$V_{F0}\times I_{F(AV)}+r_d\times I^2_{F(RMS)}$

FIG.1-FORWARD CURRENT DERATING CURVE

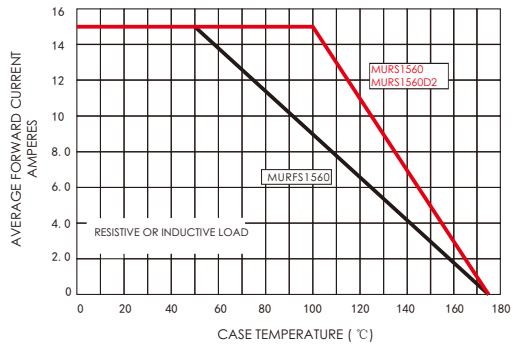


FIG.2-MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

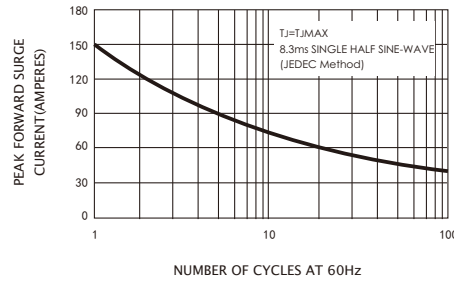


FIG.3-TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS

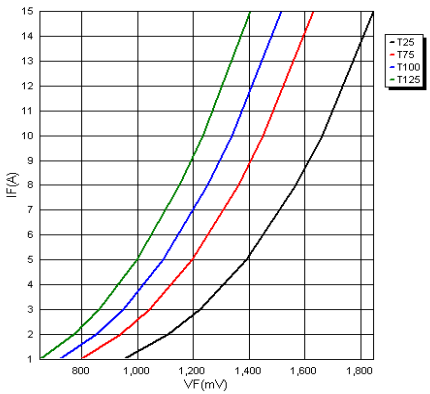


FIG.4-TYPICAL REVERSE CHARACTERISTICS

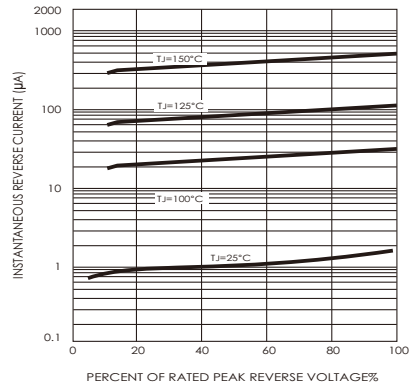


FIG.5-TYPICAL JUNCTION CAPACITANCE

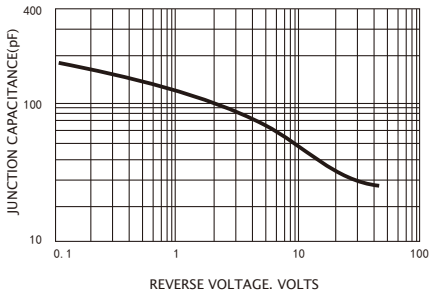


FIG.6- TYPICAL trr,ta,tb vs. FORWARD CURRENT

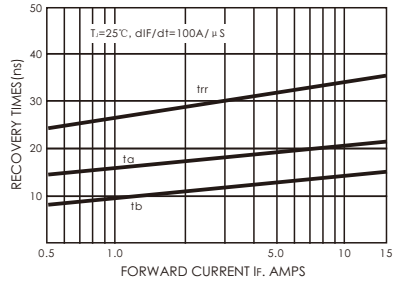
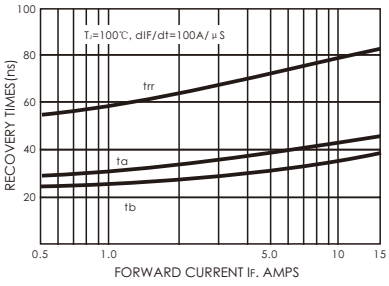
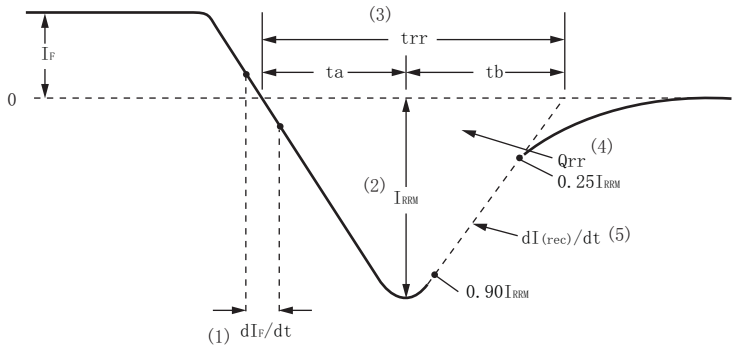


FIG.7- TYPICAL trr,ta,tb vs. FORWARD CURRENT





(1) dIF/dt-rate of change of current through zero crossing

(2) IRRM-peak reverse recovery current

(3) trr- reverse recovery time measured from zero crossing point of negative going IF to point where a line passing through 0.90IRRM and 0.25IRRM extrapolated to zero current

(4) Qrr- aera under curve defined by trr and IRRM

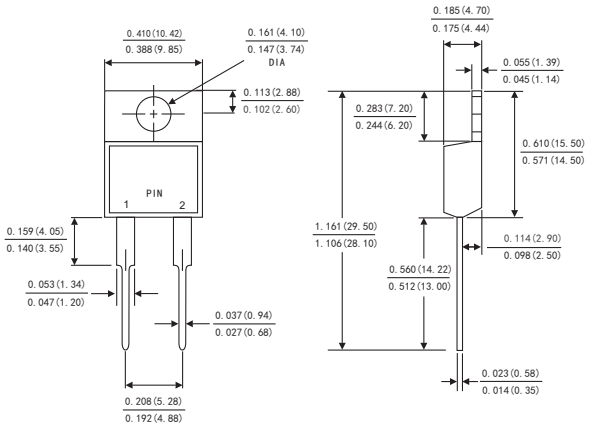
$$Qrr = \frac{t_{rr} \times I_{RRM}}{2}$$

(5) $dI_{(REC)}/d_t$-peak rate of change of current during tb portion of trr

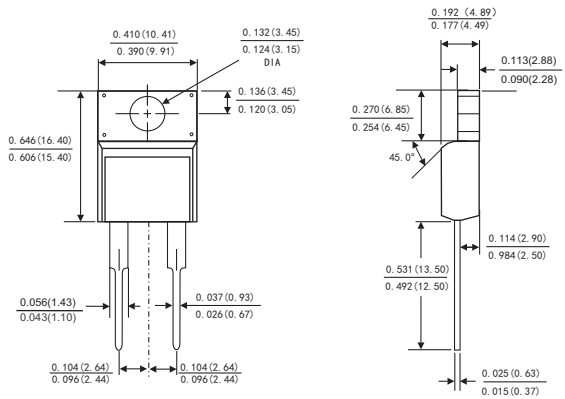
Fig. 8 – Reverse Recovery Waveform and Definitions

PACKAGE OUTLINE DIMENSIONS

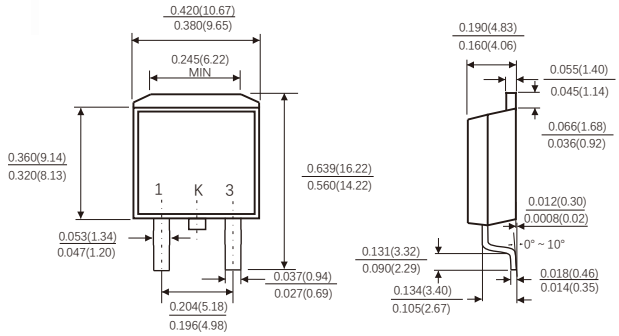
TO-220AC



ITO-220AC

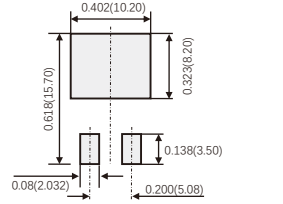


TO-263
D2PAK



Suggested Pad Layout

(TO-263)



(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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