SEMICONDUCTOR

MUR60120P

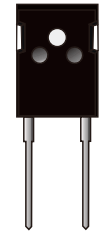
POLYIMIDE PASSIVATED SUPER FAST RECTIFIER

Reverse Voltage - 1200 Volts
Forward Current - 60.0Amperes

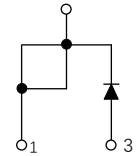
FEATURES

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

TO-247AC



Base common cathode



Cathode Anode

MECHANICAL DATA

- Case: TO-247AC molded plastic body
- Terminals: Lead solderable per MIL-STD-750,method 2026
- Polarity: As marked
- Mounting Position: Any

APPLICATIONS

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

MAXIMUM RATINGS

(Ratings at 25℃ ambient temperature unless otherwise specified)

Parameter	Symbol	Value	Unit
Maximum repetitive peak reverse voltage	V_{RRM}	1200	V
Maximum average forward rectified current	$I_{F(AV)}$	60.0	A
Peak forward surge current 8.3ms single half sine-wave superimposed on rated load (JEDEC method at rated T_L)	I_{FSM}	420	A
Operating junction temperature range	T_J	-55 to+175	℃
Storage temperature range	T_{stg}	-55 to+175	℃

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RATINGS AND CHARACTERISTIC OF MUR60120P

ELECTRICAL CHARACTERISTCS (T_J=25℃ Unless otherwise noted)

Parameter	Test Conditions		Symbol	Min.	Typ.	Max.	Unit
Breakdown voltage Blocking voltage	I_R=100uA		V_{BR} V_R	1200	-	-	V
Instaneous forward voltage	T_J=25℃	I_F=60.0A	V_F 1)	-	1.65	2.40	V
	T_J=125℃	I_F=60.0A		-	1.45	2.20	
Reverse current	T_J=25℃	V_R=1200V	I_R 2)	-	-	20	μA
	T_J=100℃			-	-	100	μA
	T_J=150℃			-	-	200	
Junction capacitance	4V,1MHz		C_J	-	300	-	pF

Notes: 1.Pulse test: 300μs 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	-	65	95	ns
	I_F=1A,V_R=30V,dI/dt=200A/μS		-	48	70	

THERMAL CHARACTERISTCS

Parameter	Symbol	TO-247AC	Unit
Typical thermal resistance 3)	$R_{\theta JC}$	0.70	℃/W

3.Thermal resistance from junction to case

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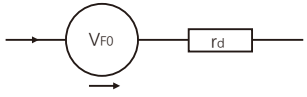
AVAILABALE PACK INFORMATION

Product code	Pack	Box Size L×W×H(mm)	Quantity(pcs/box)	Carton SizeL×W×H(mm)	Quantity(box/carton)
MUR60120P-TO-247AC	P/T	530×110×60	360	550×330×130	5

Equivalent circuits for power loss calculation



V_{F0}: threshold voltage 0.95V

r_d: Dynamic resistance 0.0073Ω

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

FIG.1-FORWARD CURRENT DERATING CURVE

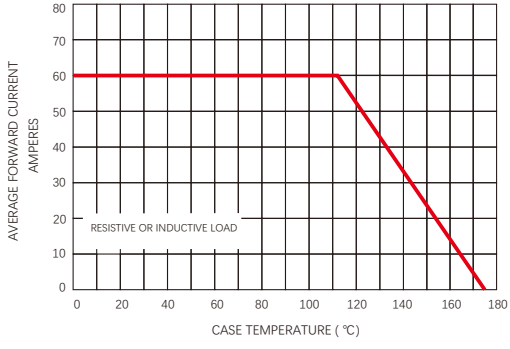
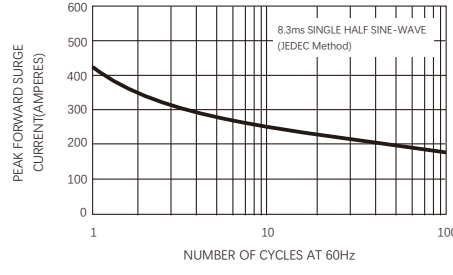


FIG.2-MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT



RATINGS AND CHARACTERISTIC OF MUR60120P

FIG.3-TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS

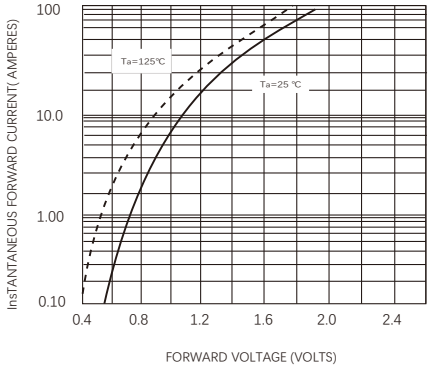


FIG.4-TYPICAL REVERSE CHARACTERISTICS

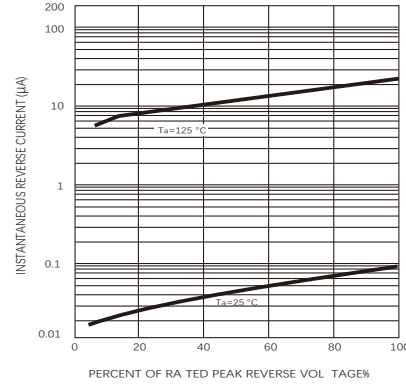


FIG.5-TYPICAL REVERSE RECOVERY CURRENT VS.dIF/dt

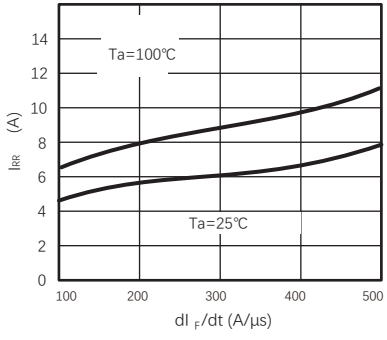


FIG.6- TYPICAL REVERSE RECOVERY TIME vs. dIF/dt

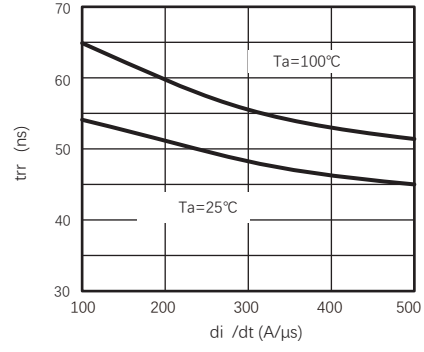


FIG.7-TYPICAL JUNCTION CAPACITANCE

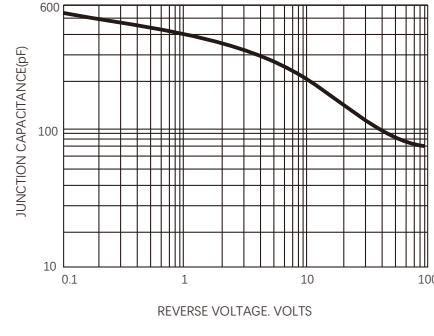
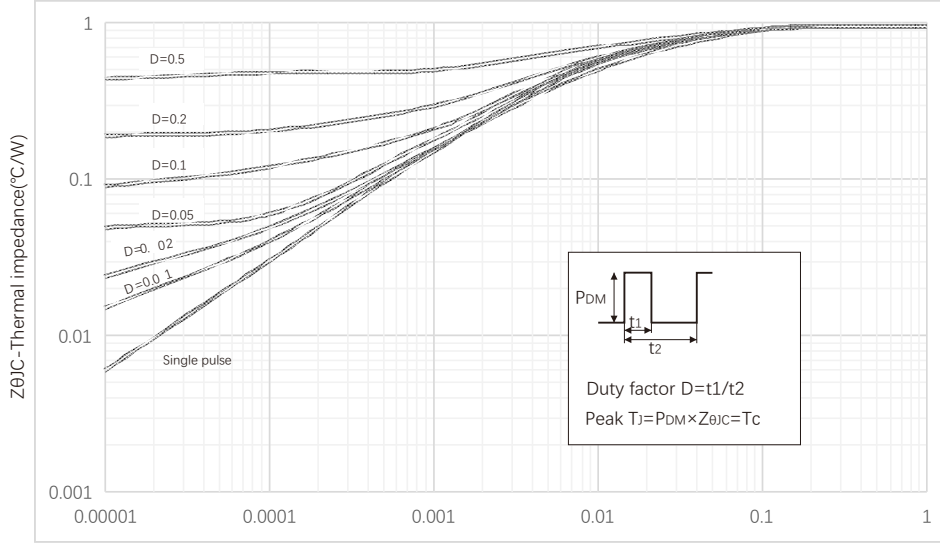
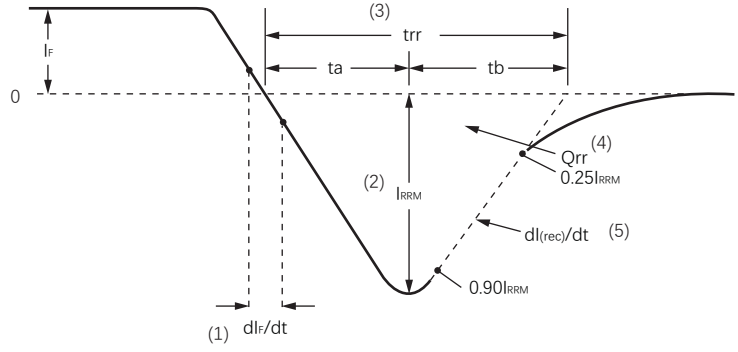


FIG.8- Maximum Thermal Impedance $Z_{\theta JC}$ characteristics





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

(2) I_{RRM}-peak reverse recovery current

(3) trr- 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) Qrr- aera under curve defined by trr and I_{RRM}

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

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

FIG.9 - Reverse Recovery Waveform and Definitions

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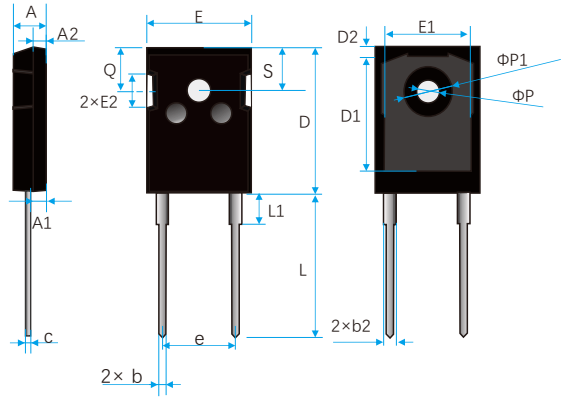

Symbol	millimeter		
	Min.	Typ.	MAX
A	4.70		5.30
A1	2.21		2.59
A2	1.50		2.49
D	20.30		21.30
E	15.48		16.24
E2	4.30		5.50
e		10.92	
L	19.80		20.30
L1	4.00		4.60
ΦP		3.50	
Q	5.38		6.19
S		6.14	
b	0.99		1.40
b2	1.65		2.39
b4	2.59		3.43
c	0.38		0.89
D1	13.07		
D2	0.51		1.35
E1	13.06		
ΦP1		7.20	

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