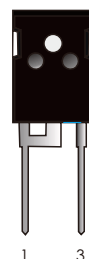


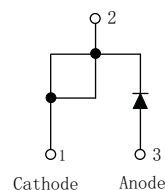
### FEATURES

- 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/10 seconds at terminals
- Component in accordance to RoHS 2011/65/EU

TO-247AC



Base common cathode



### MECHANICAL DATA

- Case: JEDEC TO-247AC molded plastic body
- Terminals: Lead solderable per MIL-STD-750,method 2026
- Polarity: As marked
- Weight: 0.22ounce, 6 grams
- Mounting Position: Any

### 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

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	30A
$V_R$	300V
$T_{rr typ}$	55ns

### MAXIMUM RATINGS

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

Parameter	Symbol	Value	Unit
Maximum repetitive peak reverse voltage	$V_{RRM}$	300	V
Maximum average forward rectified current	$I_{F(AV)}$	30	A
Peak forward surge current 8.3ms single half sine-wave superimposed on rated load (JEDEC method at rated $T_J$ )	$I_{FSM}$	300	A
Operating junction temperature range	$T_J$	-65 to+175	°C
Storage temperature range	$T_{stg}$	-65 to+175	°C

# RATINGS AND CHARACTERISTIC OF MUR3030P

## 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> =100μA		V <sub>BR</sub> V <sub>R</sub>	300	–	–	V
Instaneous forward voltage	T <sub>J</sub> =25°C	IF=5.0A	V <sub>F</sub> <sup>1)</sup>	–	0.76	–	V
		IF=10.0A		–	0.82	–	
		IF=30.0A		–	0.96	1.25	
	T <sub>J</sub> =125°C	IF=5.0A		–	0.60	–	
		IF=10.0A		–	0.68	–	
		IF=30.0A		–	0.86	–	
Reverse current	T <sub>J</sub> =25°C	V <sub>R</sub> =300V	I <sub>R</sub> <sup>2)</sup>	–	0.1	5	μA
	T <sub>J</sub> =100°C			–	5.0	–	μA
	T <sub>J</sub> =125°C			–	10.0	50	
Junction capacitance	4V, 1MHz		C <sub>J</sub>	–	228	–	pF
Series inductance	Measured lead to lead 5 mm from package body		L <sub>S</sub>	–	3.5	–	nH

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> =1.0A, dI <sub>F</sub> /dt=50A/μs, V <sub>R</sub> =30V		I <sub>rr</sub>	–	–	55	ns
	T <sub>J</sub> =25°C	I <sub>F</sub> =30A dI <sub>F</sub> /dt=200A/μs V <sub>R</sub> =200V		–	35	–	
	T <sub>J</sub> =125°C			–	50	–	
Peak recovery current	T <sub>J</sub> =25°C	I <sub>F</sub> =30A dI <sub>F</sub> /dt=200A/μs V <sub>R</sub> =200V	I <sub>RRM</sub>	–	3.0	–	A
	T <sub>J</sub> =125°C			–	7.5	–	
Reverse recovery charge	T <sub>J</sub> =25°C	I <sub>F</sub> =30A dI <sub>F</sub> /dt=200A/μs V <sub>R</sub> =200V	Q <sub>rr</sub>	–	55	–	nC
	T <sub>J</sub> =125°C			–	190	–	

# RATINGS AND CHARACTERISTIC OF MUR3030P

## THERMAL CHARACTERISTICS

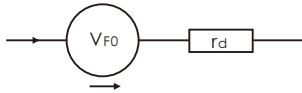
Parameter	Symbol	TO-247AC	Unit
Typical thermal resistance <sup>3)</sup>	$R_{\theta JC}$	0.44 Typ. 0.90 MAX	°C/W

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)
MUR3030P-TO-247AC	P/T	530×110×60	360	550×330×130	5

## Equivalent circuits for power loss calculation



$V_{F0}$ : threshold voltage 0.77V

$r_d$ : Dynamic resistance 0.006Ω

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

FIG.1-FORWARD CURRENT DERATING CURVE

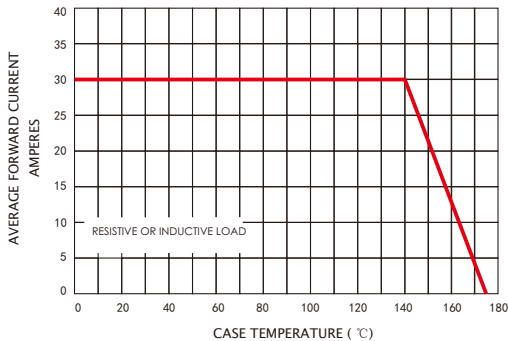
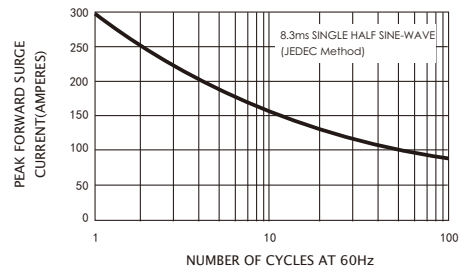


FIG.2-MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT



# RATINGS AND CHARACTERISTIC OF MUR3030P

FIG.3-TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS

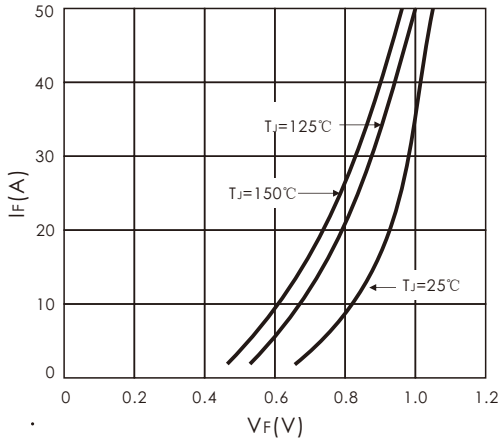


FIG.4-TYPICAL REVERSE CHARACTERISTICS

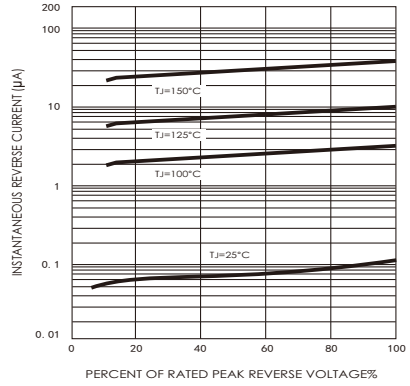


FIG.5-TYPICAL JUNCTION CAPACITANCE

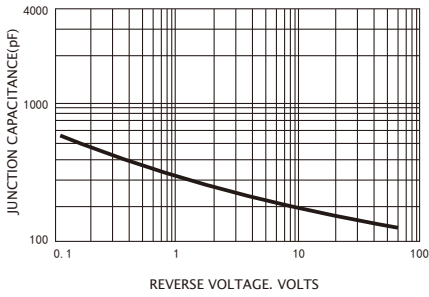


FIG.6- TYPICAL REVERSE RECOVERY TIME vs. dI<sub>F</sub>/dt

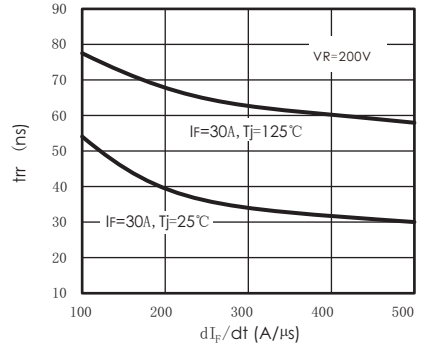


FIG.7- TYPICAL STORED CHARGE VS.dI<sub>F</sub>/dt

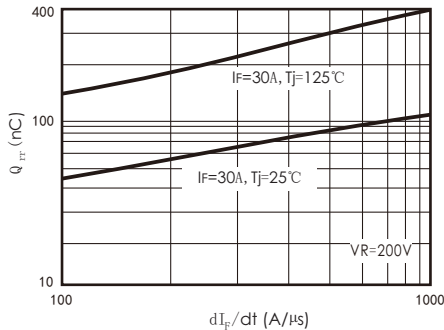
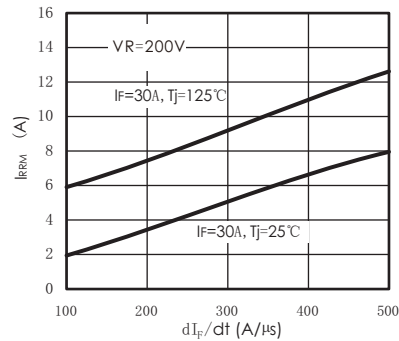
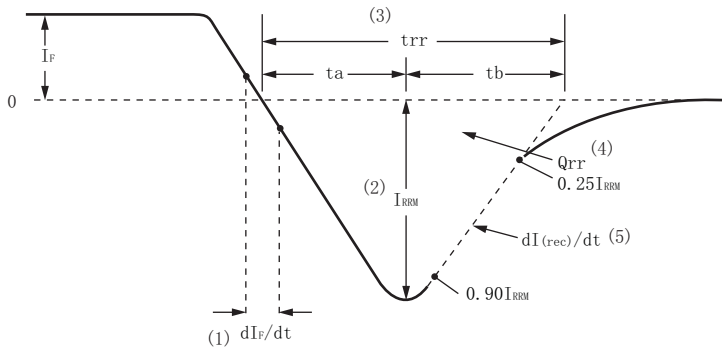
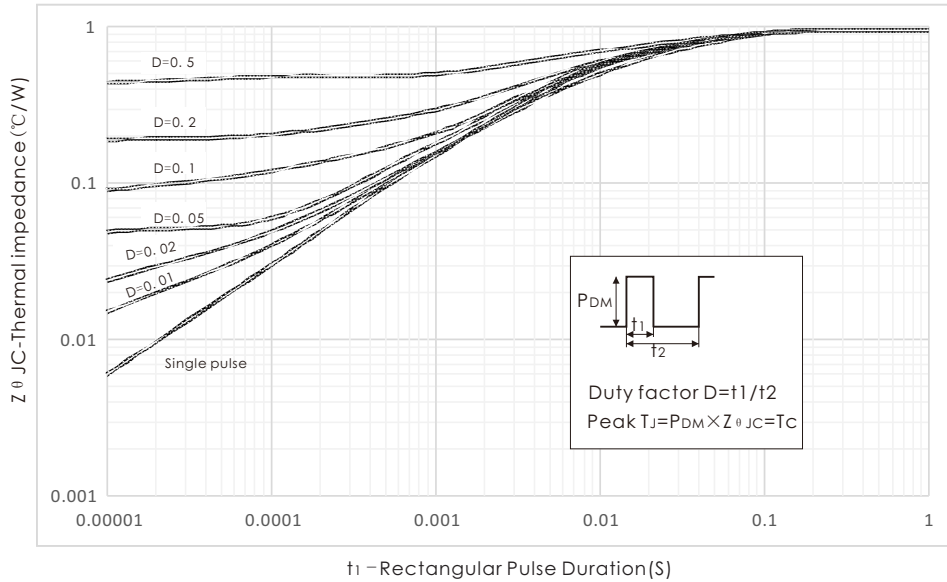


FIG.8- TYPICAL REVERSE RECOVERY CURRENT VS.dI<sub>F</sub>/dt



# RATINGS AND CHARACTERISTIC OF MUR3030P

FIG.9- 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)  $t_{rr}$ - 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

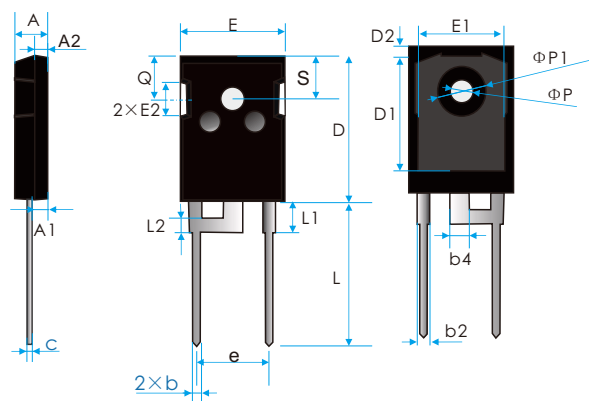
(4)  $Q_{rr}$ -area under curve defined by  $t_{rr}$  and  $I_{RRM}$

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

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

Fig. 10 - Reverse Recovery Waveform and Definitions

# PACKAGE OUTLINE DIMENSIONS



Symbol	millimeter		
	Min.	Typ.	MAX
A	4.70		5.30
A1	2.21		2.59
A2	1.50		2.49
D	20.30		20.70
E	15.48		16.24
E2	4.30		5.50
e		10.92	
L	19.80		20.30
L1	4.40		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	13.45		
ΦP1		7.20	
L2		2.10	