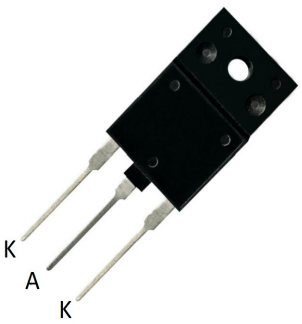
MUR6060PTR

Ultra-Fast Recovery Diodes 30A*2 FRED Pt

Features

- Adopt FRED chip
- Low forward Voltage drop
- Fast reverse recovery time
- High frequency operation
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Guard ring for enhanced ruggedness and long term reliability

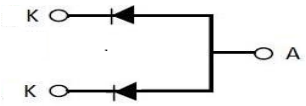


Typical Applications

- Typical applications are in switching power supplies, converters, freewheeling diodes, and reverse battery protection.

Mechanical Data

- **Package**: TO-247F-3L
  Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant
- **Terminals**: Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Polarity**: As marked



	V_{RSM} V	V_{RRM} V
MUR6060PTR	600	600

■Maximum Ratings (T_j=25℃ Unless otherwise specified)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			600	V
$I_{F(RMS)}$	RMS forward voltage			60	A
$I_{F(AV)}$	Average forward current δ = 0.5	Tc = 125°C Tc = 110°C	Per diode Per device	30 60	A
		Tc = 100°C Tc = 80°C	Per diode Per device	40 80	
I_{FSM}	Surge non repetitive forward current	tp = 10ms sinusoidal		300	A
T_{stg}	Storage temperature range			-65 to + 175	°C
T_j	Maximum operating junction temperature			175	°C

Symbol	Parameter		Value (max).	Unit
$R_{th(j-c)}$	Junction to case	Per diode	1.05	°C/W
		Total	0.68	
$R_{th(c)}$	Coupling		0.3	°C/W

When the diodes 1 and 2 are used simultaneously:
Δ Tj(diode 1) = P(diode 1) x $R_{th(j-c)}$(Per diode) + P(diode 2) x $R_{th(c)}$

■Electrical Characteristics

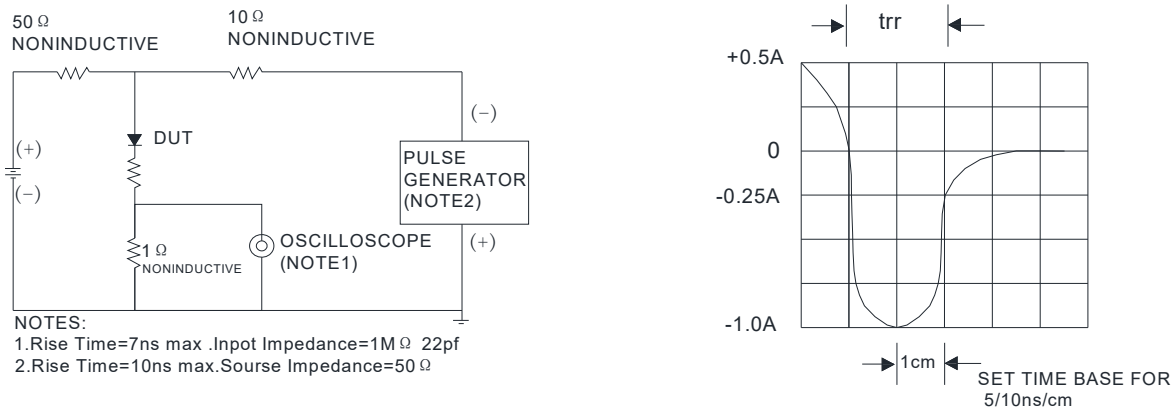
Symbol	Parameter	Test conditions		Min.	Typ	Max.	Unit
I_R *	Reverse leakage current	T_j = 25°C	$V_R = V_{RRM}$			25	μA
		T_j = 150°C			80	800	
V_F **	Forward voltage drop	T_j = 25°C	I_F = 30A			1.65	V
		T_j = 150°C			1.0	1.25	
		T_j = 25°C	I_F =60A			1.78	
		T_j = 150°C			1.24	1.55	

Pulse test: * tp = 5 ms, δ < 2%
** tp = 380 μs, δ < 2%

To evaluate the conduction losses use the following equation: $P = 0.95 \times I_{F(AV)} + 0.010\ I_F^2{}_{(RMS)}$

Symbol	Parameter	Test conditions		Min.	Typ	Max.	Unit
t_{rr}	Reverse recovery time	T_j = 25°C	I_F = 0.5A Irr = 0.25A I_R =1A			65	ns
			I_F = 1A dI_F/dt = 50 A/μs V_R =30V		65	90	
I_{RM}	Reverse recovery current	T_j = 125°C	I_F = 30A V_R = 400V dI_F/dt = 100 A/μs		11.5	16	A
t_{fr}	Forward recovery time	T_j = 25°C	I_F = 30A dI_F/dt = 100 A/μs $V_{FR} = 1.1 \times V_{Fmax}$			500	ns
V_{FP}	Forward recovery voltage	T_j = 25°C	I_F = 30A dI_F/dt = 100 A/μs $V_{FR} = 1.1 \times V_{Fmax}$		2.5		V

FIG.5: Diagram of circuit and Testing wave form of reverse recovery time



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■ Characteristics(Typical)

Figure 1: Conduction losses versus average forward current (per diode)

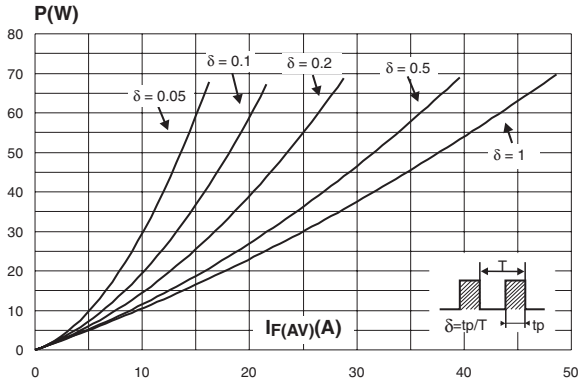


Figure 2: Forward voltage drop versus forward current (per diode)

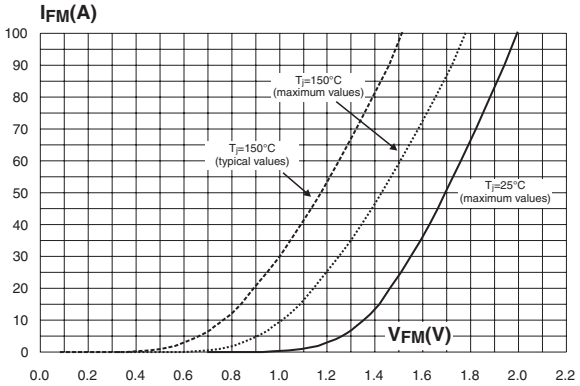


Figure 3: Relative variation of thermal impedance junction to case versus pulse duration

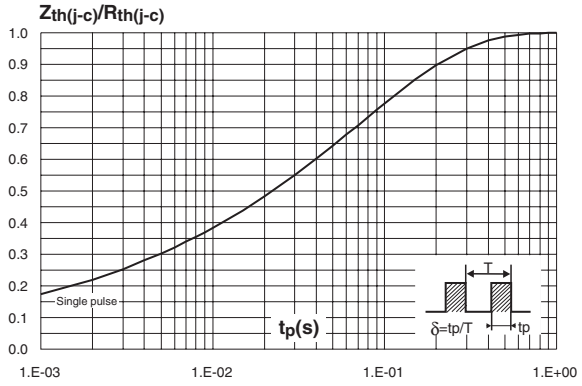


Figure 4: Peak reverse recovery current versus dI_F/dt (typical values, per diode)

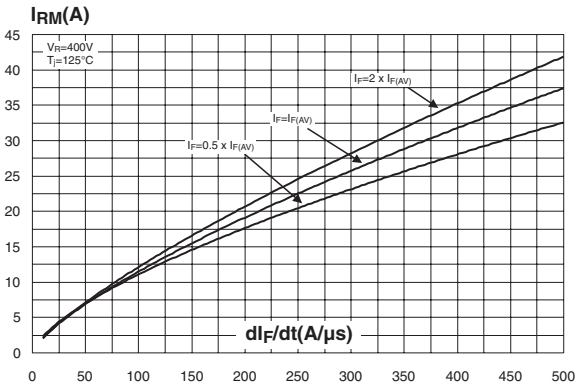


Figure 5: Reverse recovery time versus dI_F/dt (typical values, per diode)

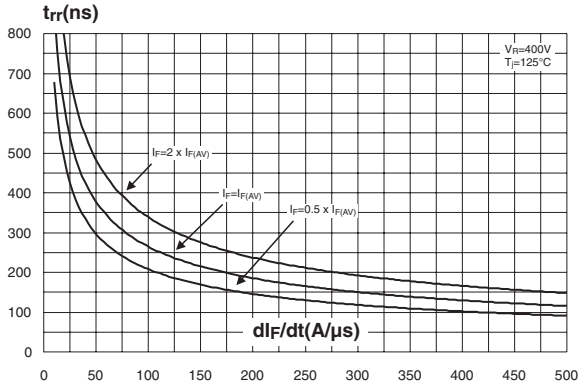


Figure 6: Reverse recovery charges versus dI_F/dt (typical values, per diode)

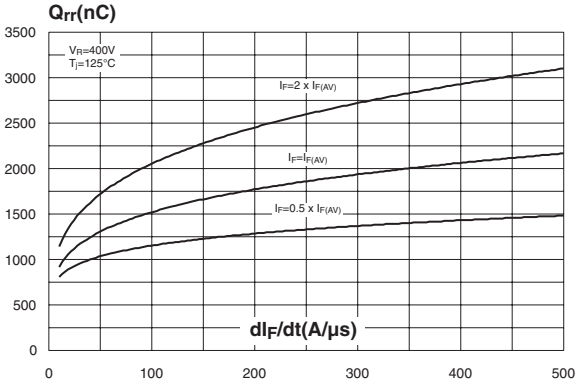


Figure 7: Reverse recovery softness factor versus dI_F/dt (typical values, per diode)

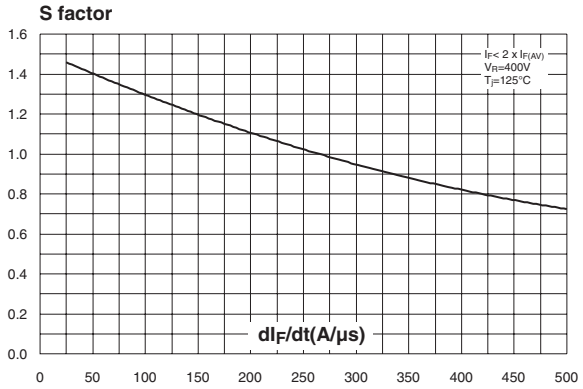


Figure 8: Relative variations of dynamic parameters versus junction temperature

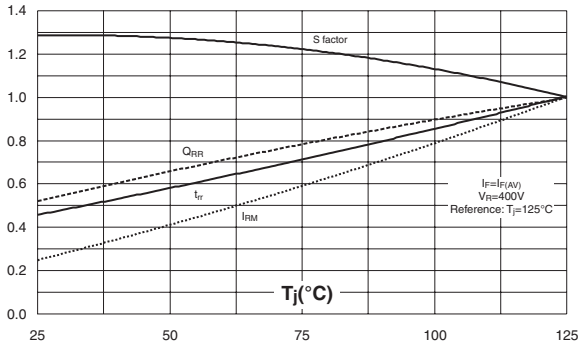


Figure 9: Transient peak forward voltage versus dI_F/dt (typical values, per diode)

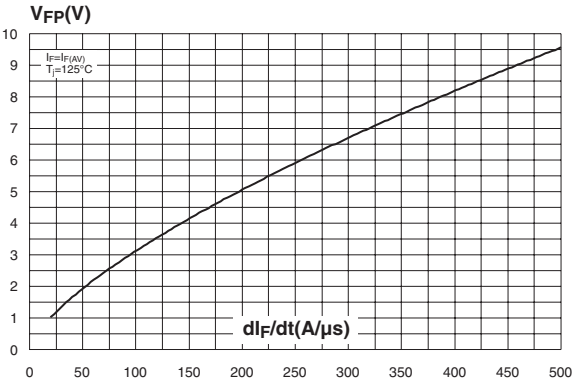


Figure 10: Forward recovery time versus dI_F/dt (typical values, per diode)

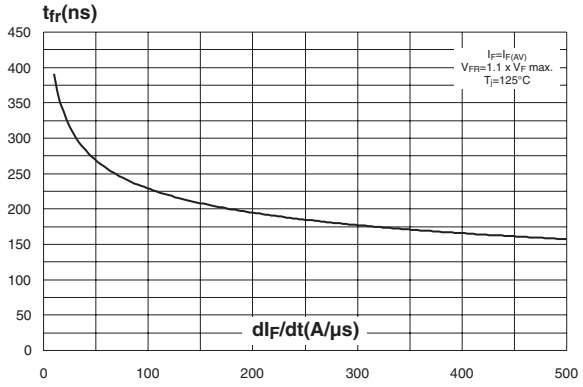
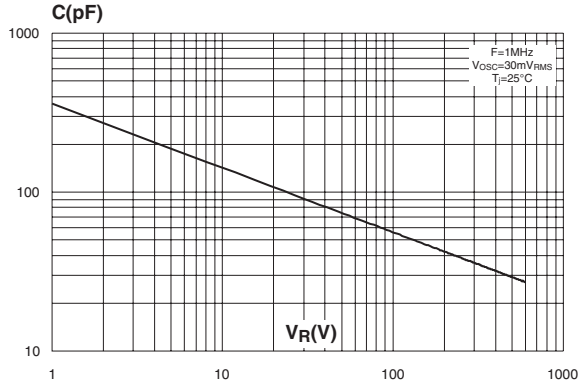


Figure 11: Junction capacitance versus reverse voltage applied (typical values, per diode)



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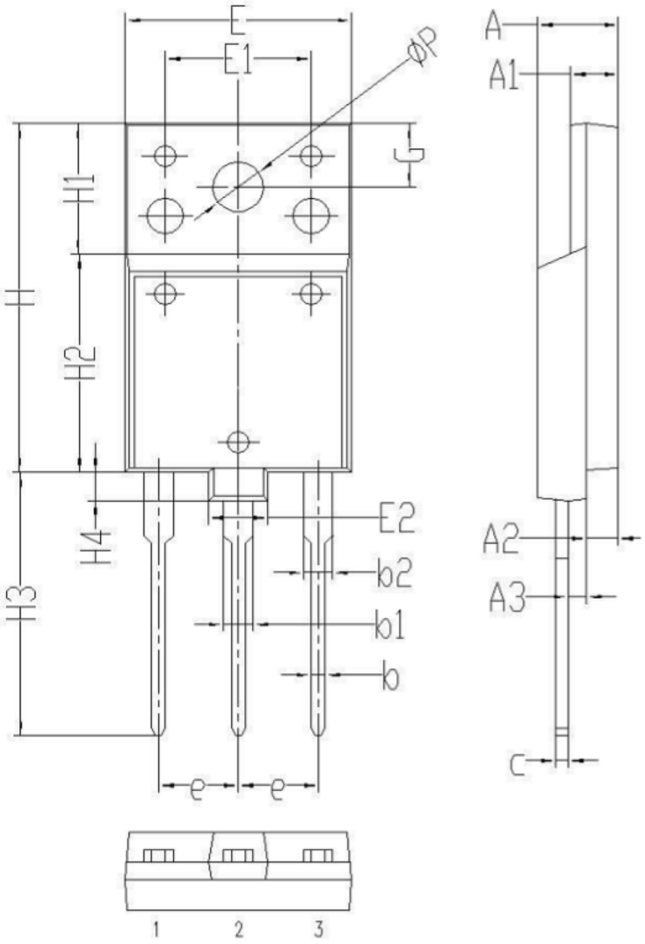
Package Information

TO-247F-3L PACKAGE



Symbol	Unit mm		
	Min	Typ	Max
A	5.35	5.55	5.75
A1	2.80	3.00	3.20
A2	1.90	2.10	2.30
A3	1.10	1.30	1.50
b	0.65	0.75	0.85
b1	1.80	2.00	2.20
b2	1.80	2.00	2.20
c	0.70	0.90	1.10
e	5.25	5.45	5.65
E	15.3	15.5	15.7
E1	9.80	10.0	10.2
E2	3.80	4.00	4.20
H	24.3	24.5	24.7
H1	9.00	9.20	9.40
H2	15.1	15.3	15.5
H3	18.5	19.0	19.5
H4	1.80	2.00	2.20
H5	4.80	5.00	5.20
G	4.3	4.5	4.7
ΦP	3.40	3.60	3.80