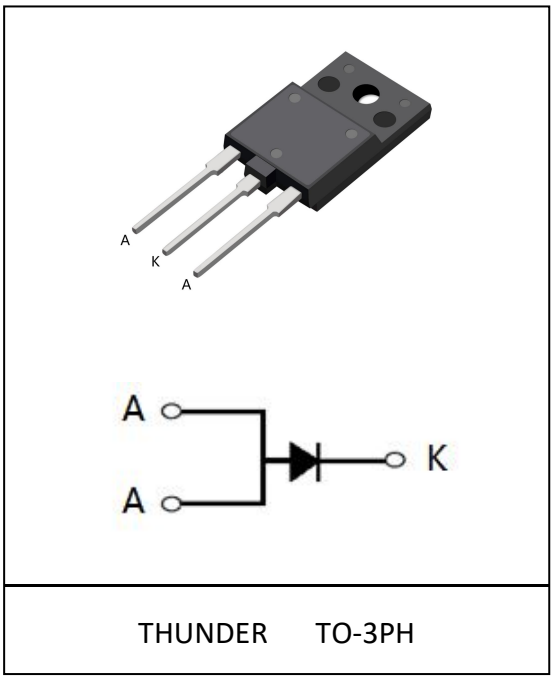
FRED
Ultrafast Soft Recovery Diode, 60A

Features:

- Ultrafast Recovery
- 175°C operating junction temperature
- High frequency operation
- Low power loss, less RFI and EMI
- Low I_R value
- High surge capacity
- Epitaxial chip construction



THUNDER TO-3PH

Product Summary	
V_R	600 V
$I_{F(AV)}$	60A
t_{rr}	32ns

Description/Applications

These diodes are optimized to less losses and EMI/RFI in high frequency power conditioning system. The soft recovery behavior of the diodes offers the need as snubber in most applications. These devices are ideally suited for HF welding power converters and other applications where the switching losses are not significant portion of the total losses.

Absolute Maximum Ratings

Parameter	Symbol	Test Conditions	Values	Unit
Repetitive peak reverse voltage	V_{RRM}		600	V
Continuous forward current	$I_{F(AV)}$	Tc =110°C	60	A
Single pulse forward current	I_{FSM}	Tc =25°C	600	
Maximum repetitive forward current	I_{FRM}	Square wave, 20kHZ	120	
Operating junction	Tj		175	°C
Storage temperatures	Tstg		-55 to +175	°C

Electrical characteristics (Ta=25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Breakdown voltage Blocking voltage	V_{BR}, V_R	I_R=100μA	600			V
Forward voltage	V_F	I_F=60A		1.45	1.80	
		I_F=60A, Tj =125°C		1.30	1.70	
Reverse leakage current	I_R	V_R= V_{RRM}			50	μA
		Tj=150°C, V_R=600V			500	
Reverse recovery time	t_{rr}	I_F=0.5A, I_R=1A, I_{RR}=0.25A		50	70	ns
		I_F=1A,V_R=30V, di/*dt* =200A/us		32	45	
Reverse recovery time	t_{rr}	I_F =60A,V_R =300V, d_{IF}/dt = -200A/μs ,T_J=25℃		55		ns
Maximum Reverse Recovery Current	I_{RM}			5		A
Reverse Recovery Charge	Q_{rr}			346		nC
Reverse recovery time	t_{rr}	I_F =60A,VR =300V, d_{IF}/dt = -200A/μs ,T_J=125℃		132		ns
Maximum Reverse Recovery Current	I_{RM}			12		A
Reverse Recovery Charge	Q_{rr}			1960		nC

Thermal characteristics

Paramter	Symbol	Typ.	Unit
Junction-to-Case	$R_{\theta JC}$	0.75	℃/W

Electrical performance (typical)

FIG.1 Forward Characteristic (typical)

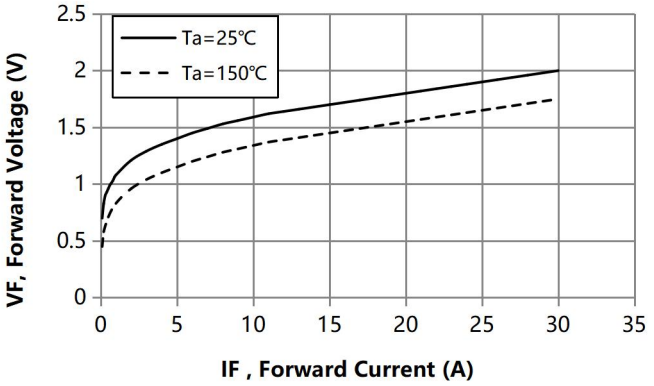


FIG.2 Reverse Characteristic (Typical)

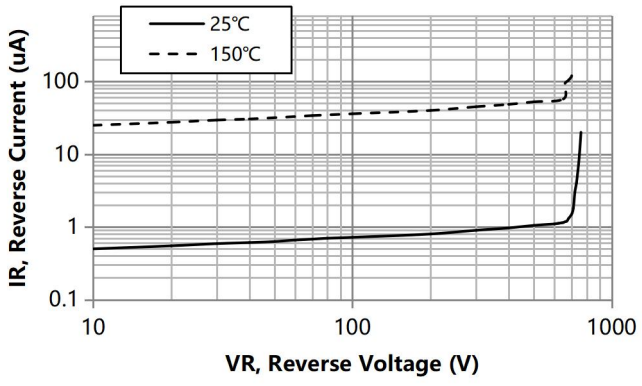


FIG.3 Reverse Recover Time vs. Current Rate of Change

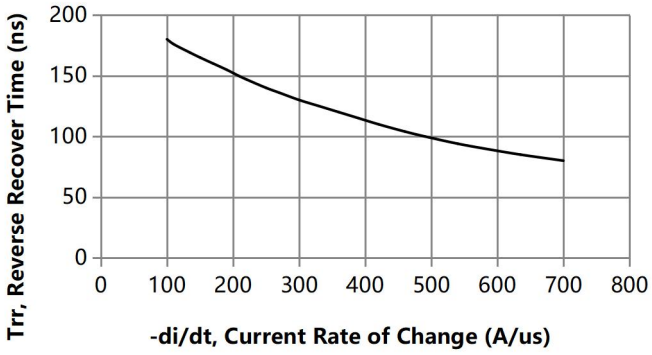


FIG.4 Reverse Recover Charge vs. Current Rate of Change

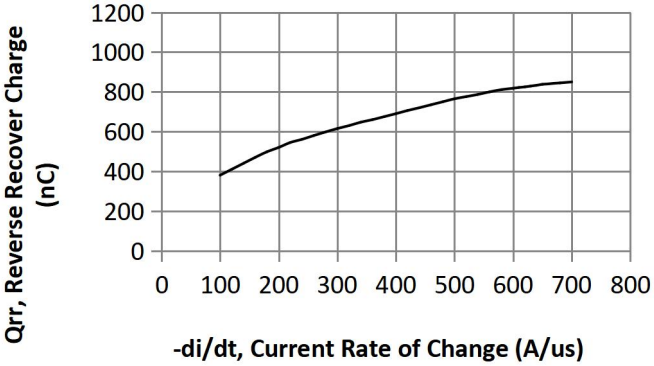


FIG.5 Reverse Recover Current vs. Current Rate of Change

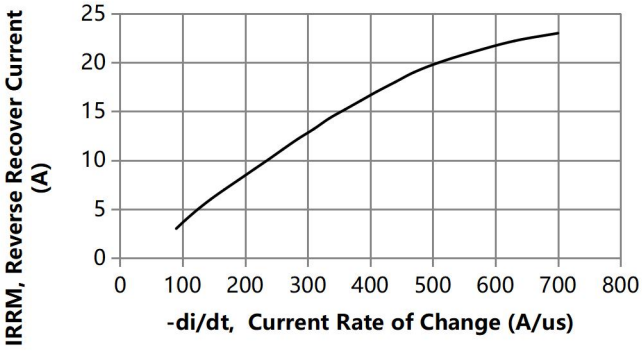
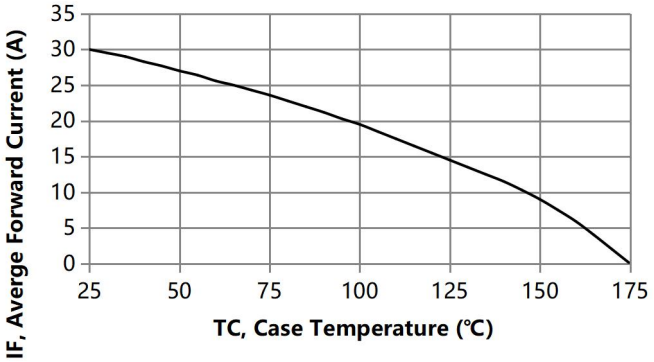
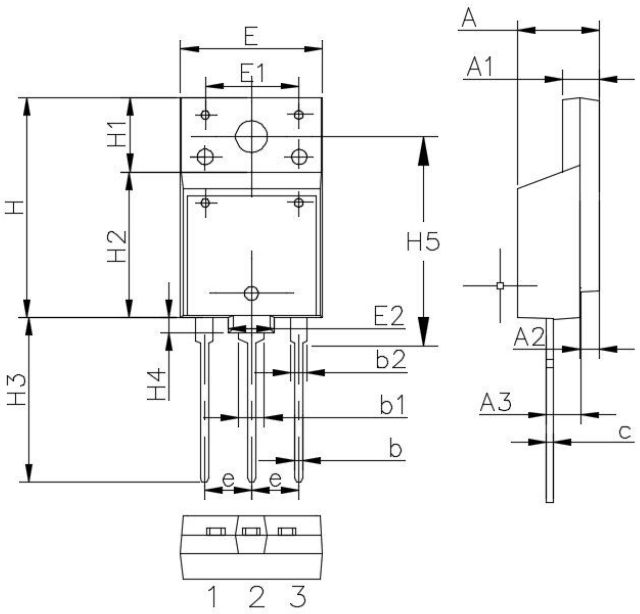


FIG.6 Average Forward Current vs. Case Temperature



Package Information

TO-3PH PACKAGE



基本尺寸

Symbol	单位 mm		
	Min	Nom	Max
A	5.35	5.55	5.75
A1	2.80	3.00	3.20
A2	1.90	2.10	2.30
A3	1.00	1.20	1.40
b	0.80	0.90	1.00
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	15.2	15.4	15.6
E1	9.80	10.0	10.2
E2	3.80	4.00	4.20
H	24.3	24.5	24.7
H1	9.80	10.0	10.2
H2	14.3	14.5	14.7
H3	18.5	19.0	19.5
H4	2.00	2.20	2.40
H5	24.0	24.5	25.0
G	4.3	4.5	4.7
ΦP	3.30	3.50	3.70

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