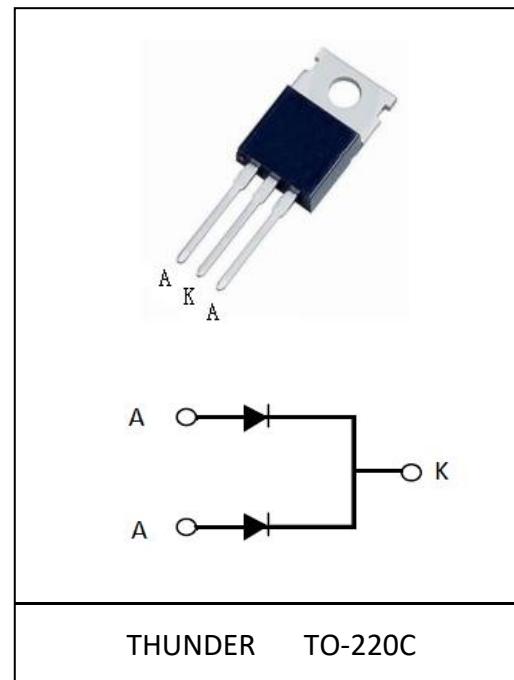


**Thunder High Power Products**
**FRD**  
**Ultrafast Soft Recovery Diode, 20A**
**Features:**

- 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

**Product Summary**

$V_R$	600 V
$I_F(AV)$	2*10A
$t_{rr}$	25 ns


**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	$I_F(AV)$	$T_c = 110^\circ C$	20	A
Single pulse forward current	$I_{FSM}$	$T_c = 25^\circ C$	200	
Maximum repetitive forward current	$I_{FRM}$	Square wave, 20kHz	20	
Operating junction	$T_j$		175	°C
Storage temperatures	$T_{stg}$		-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 <sub>BR</sub> , V <sub>R</sub>	I <sub>R</sub> =100μA	600			V
Forward voltage (Per Diode)	V <sub>F</sub>	I <sub>F</sub> =10A		1.35	1.70	
		I <sub>F</sub> =10A, T <sub>j</sub> =125°C		1.25	1.60	
Reverse leakage current(Per Diode)	I <sub>R</sub>	V <sub>R</sub> =V <sub>RRM</sub>			20	μA
		T <sub>j</sub> =150°C, V <sub>R</sub> =600V			200	
Reverse recovery time(Per Diode)	t <sub>rr</sub>	I <sub>F</sub> =0.5A, I <sub>R</sub> =1A, I <sub>RR</sub> =0.25A		35	50	ns
		I <sub>F</sub> =1A, V <sub>R</sub> =30V, di/dt=200A/us		25	35	

**Thermal characteristics**

Paramter	Symbol	Typ.	Unit
R <sub>θJC</sub>	Junction-to-Case	3.0	°C/W

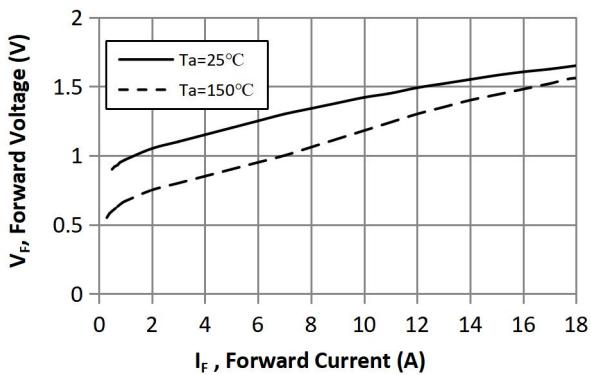
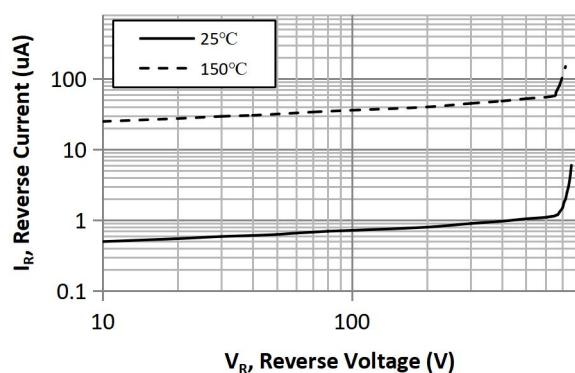
**Electrical performance (Typical per die)**
**FIG.1 Forward Characteristic (typical)**

**FIG.2 Reverse Characteristic (Typical)**


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

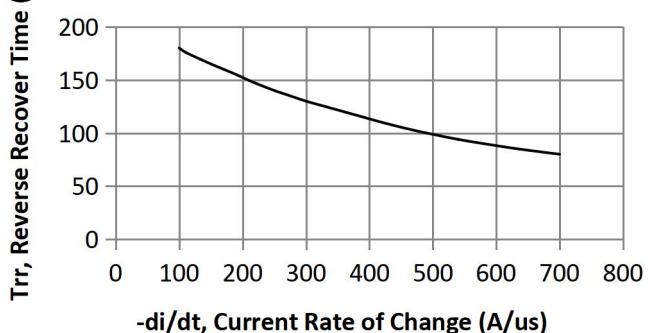


FIG.4 Reverse Recover Charge vs. Current Rate of Change

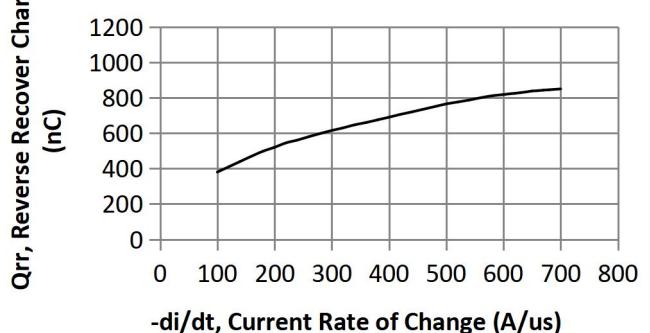


FIG.5 Reverse Recover Current vs. Current Rate of Change

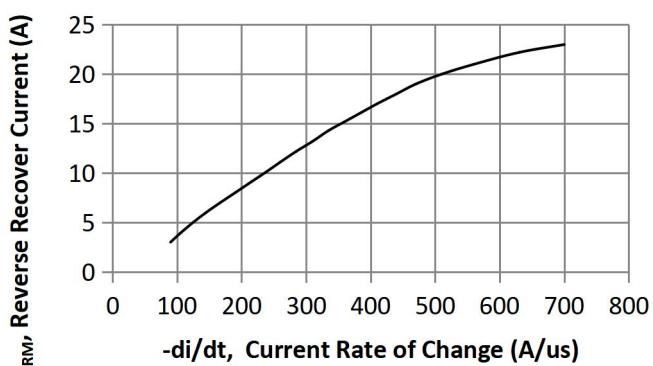


FIG.6 Average Forward Current vs. Case Temperature

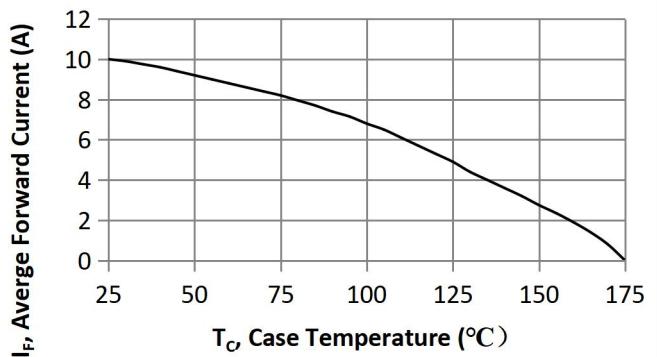
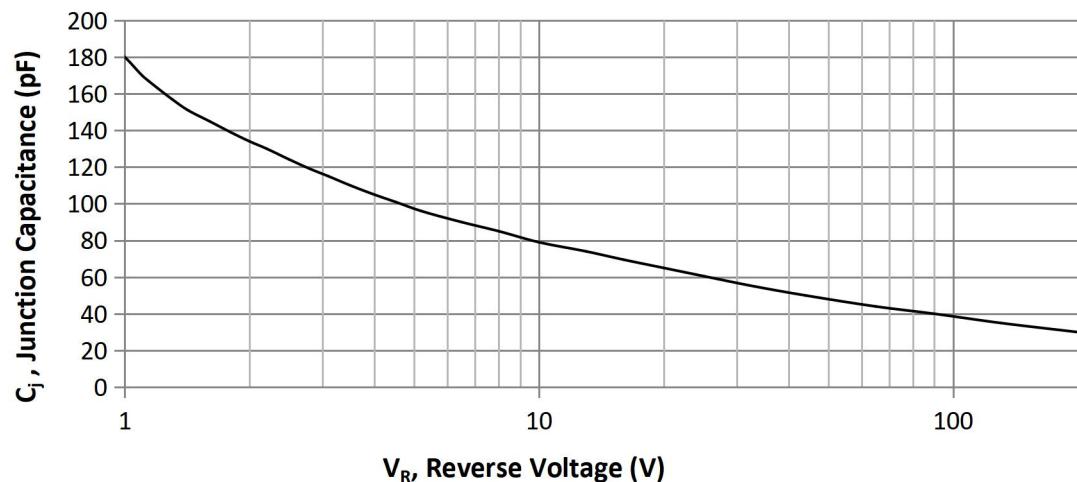
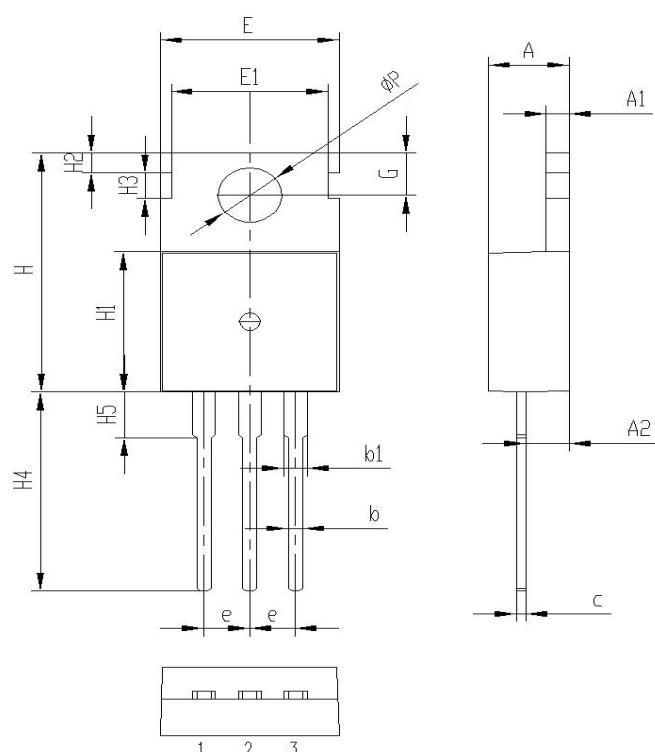


FIG.7 Junction Capacitance vs. Reverse Voltage



## Package Information

### TO-220C PACKAGE



基本尺寸

Symbol	单位 mm		
	Min	Nom	Max
A	4.30	4.5	4.70
A1	1.20	1.30	1.40
A2	2.20	2.4	2.60
b	0.60	0.8	1.00
b1	1.20	1.30	1.40
c	0.40	0.5	0.60
e	2.44	2.54	2.64
E	9.80	10.0	10.2
E1	8.50	8.70	8.90
H	15.5	15.7	15.9
H1	9.00	9.2	9.40
H2	1.10	1.34	1.50
H3	1.50	1.7	1.90
H4	12.9	13.3	13.7
H5	2.80	3.0	3.20
G	2.60	2.8	3.00
ΦP	3.40	3.6	3.80

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