Fuji Electric

Innovating Energy Technology

FDC2AT10S65

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SiC-SBD

SiC Schottky Barrier Diode

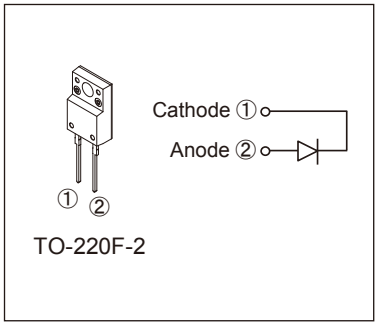
Features

- New 2nd Generation Technology
- Low forward voltage
- High surge current capability
- High speed switching
- Pb-free lead terminal; RoHS compliant
- Halogen-free molding compound

Applications

- Switch mode power supply
- Uninterruptible power supply
- PV Power Conditioner

Internal circuit chart



TO-220F-2

Maximum Ratings and Characteristics

● **Absolute Maximum Ratings at T_{vj} = 25°C(unless otherwise specified)**

Parameter	Symbol	Value	Unit	Remarks
Repetitive peak reverse voltage	V_{RRM}	650	V	
Continuous forward current	I_F	10	A	T_c < 115 °C, D = 1
Surge non-repetitive forward current (half sine wave)	I_{FSM}	82	A	T_c = 25 °C, t_p = 10 ms
		61.5	A	T_c = 150 °C, t_p = 10 ms
I^2t value	$\int I^2dt$	33.6	A^2s	T_c = 25 °C, t_p = 10 ms
		18.9	A^2s	T_c = 150 °C, t_p = 10 ms
Max. Power Dissipation	P_{tot}	54	W	T_c = 25 °C
Operating junction temperature	T_{vj}	175	°C	
Storage temperature	T_{stg}	-55 ~ +175	°C	
Isolation Voltage	V_{iso}	2	kVrms	t = 60sec, f = 60Hz

● **Electrical Characteristics at T_{vj} = 25°C(unless otherwise specified)**

Static characteristics

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
DC blocking voltage	V_{DC}	I_R = 1 mA	650	-	-	V
Forward voltage	V_F	I_F = 10A, T_{vj} = 25 °C	1.10	1.30	1.50	V
		I_F = 10 A, T_{vj} = 150 °C	-	1.48	1.99	V
Reverse current	I_R	V_R = 650 V, T_{vj} = 25 °C	-	0.4	50	μA
		V_R = 650 V, T_{vj} = 150 °C	-	2	200	μA

Dynamic characteristics

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Total Capacitive Charge	Q_C	V_R = 400 V, I_F = 10 A, -di/dt = 200 A/μs, T_{vj} = 150 °C	-	9.5	-	nC
Total Capacitance	C	V_R = 400 V, f = 1 MHz	-	44	-	pF

● **Thermal Resistance**

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance, Junction –Ambient	$R_{th(j-a)}$	-	-	58	°C/W
Thermal Resistance, Junction –Case	$R_{th(j-c)}$	-	-	2.80	°C/W

Figure 1. Allowable power dissipation

$P_{tot} = f(T_c)$

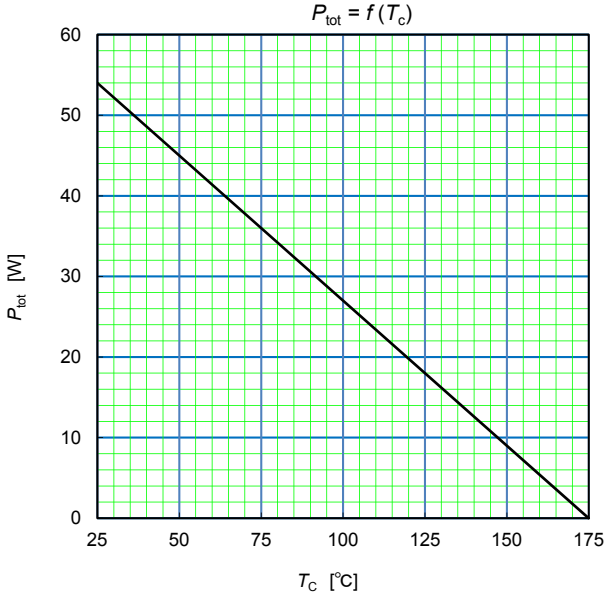


Figure 2. Peak forward current

$I_F = f(T_c)$: $T_{vj} \leq 175$ ℃, $R_{th(j\text{-}c)\ max.}$

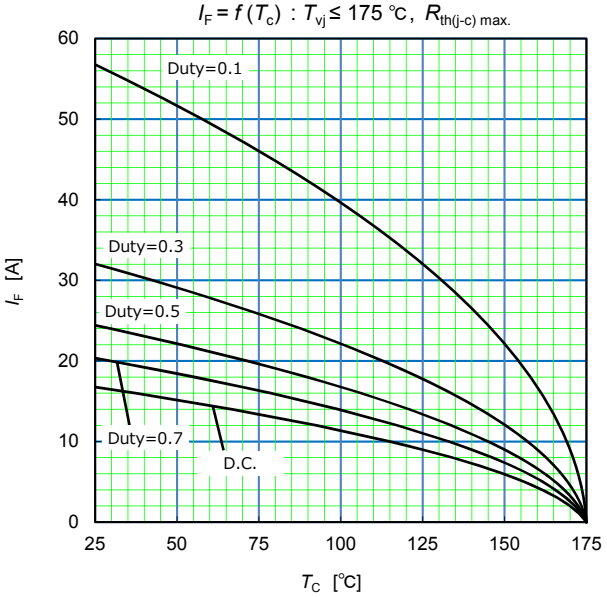


Figure 3. Typical forward characteristics

$I_F = f(V_F)$

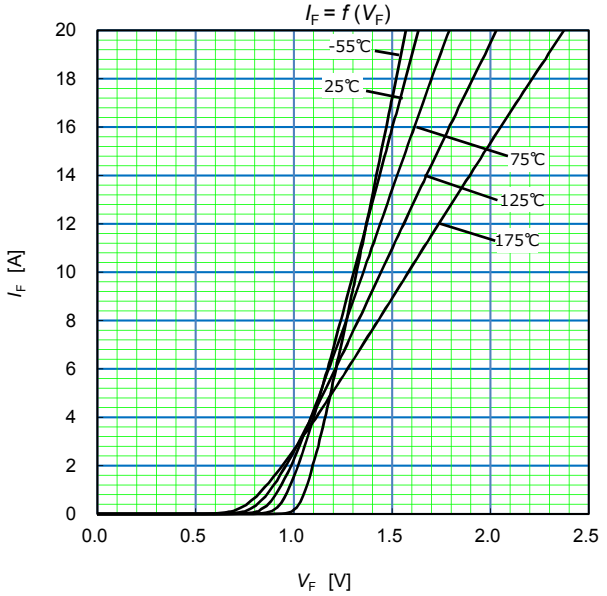


Figure 4. Typical forward characteristics

$I_F = f(V_F)$

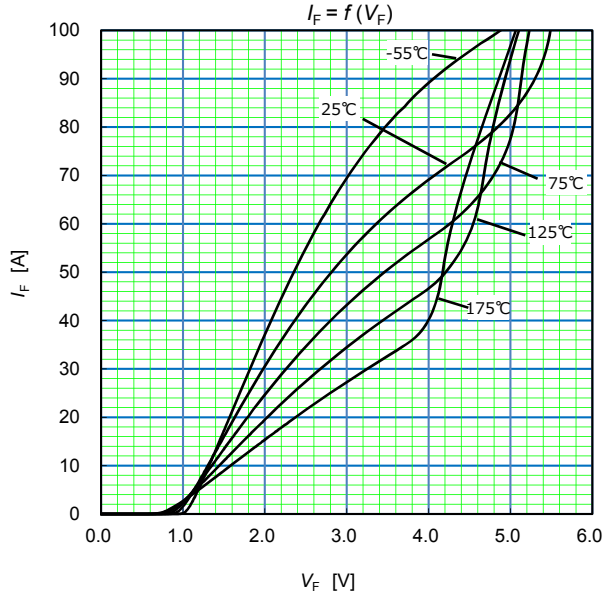


Figure 5. Typical reverse characteristics

$I_R = f(V_R)$

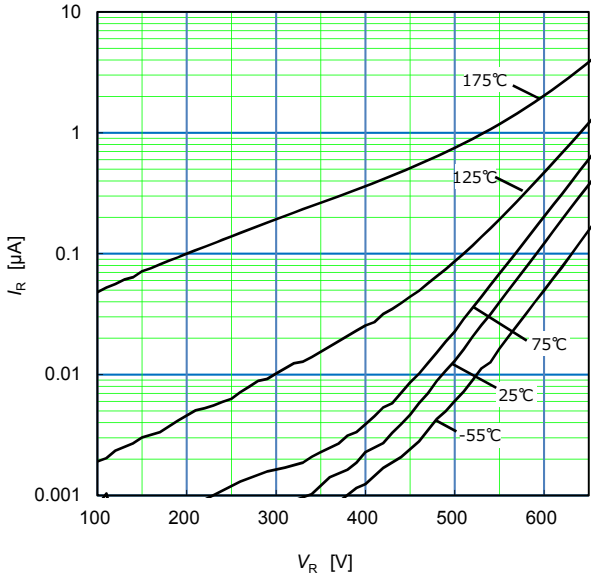


Figure 6. Typical capacitance

$C = f(V_R)$: $f = 1$ MHz

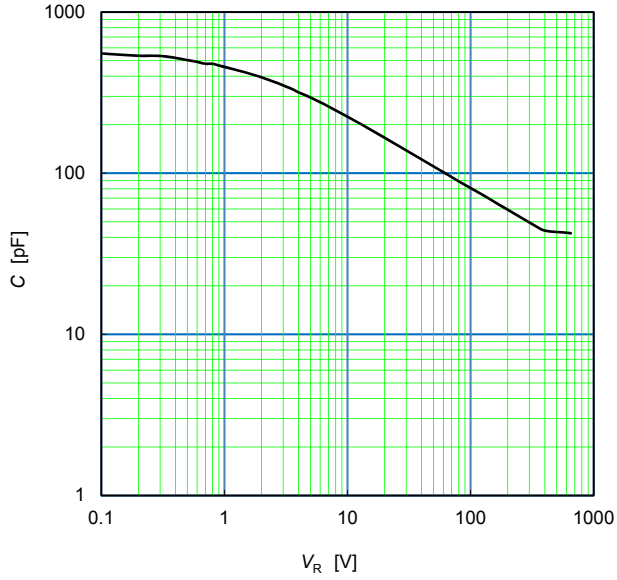


Figure 7. Typical capacitance stored energy

$E_C = f(V_R)$

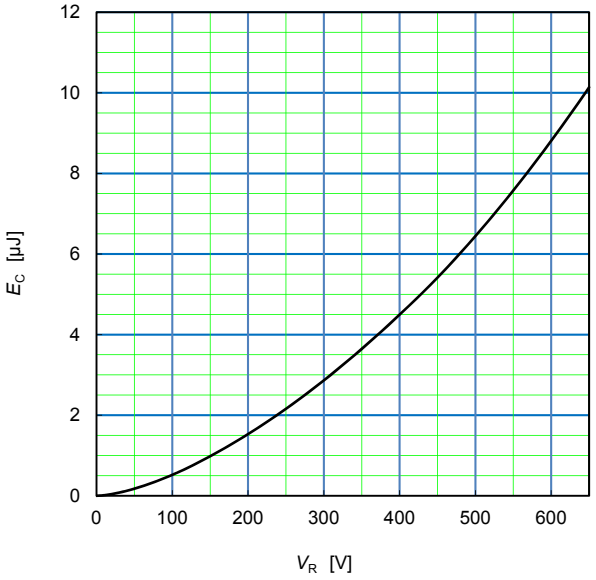
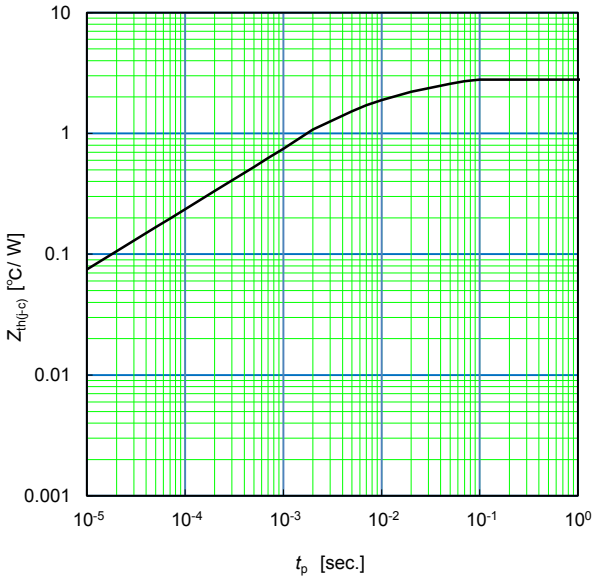
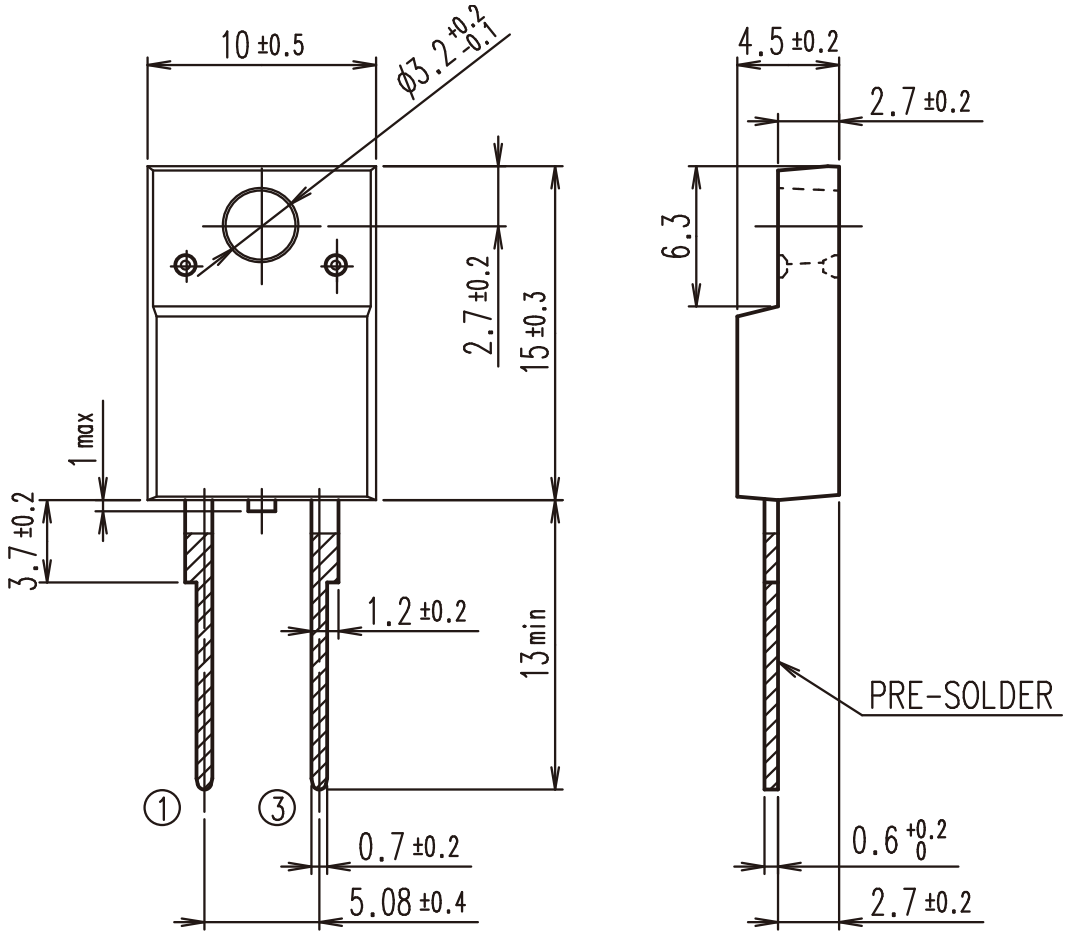


Figure 8. Transient Thermal Impedance

$Z_{th(j-c)} = f(t) : D = 0$

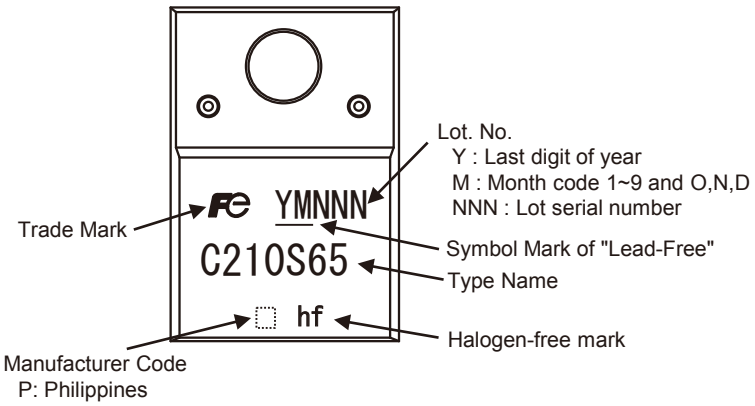


Outview: TO-220F-2 Package



CONNECTION
① Cathode
③ Anode
DIMENSIONS ARE IN MILLIMETERS

Marking



* The font (font type, size) and the trademark-size might be actually different.

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- Audiovisual equipment
- Electrical home appliances
- Personal equipment
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- Traffic-signal control equipment
- Gas leakage detectors with an auto-shut-off feature
- Emergency equipment for responding to disasters and anti-burglary devices
- Safety devices
- Medical equipment

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