

### Features

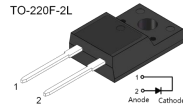
- Reverse withstand voltage 650V
- Zero reverse recovery current
- High working frequency
- Switch characteristics are not affected by temperature
- Fast switching speed
- Positive temperature coefficient of positive pressure drop

### Application

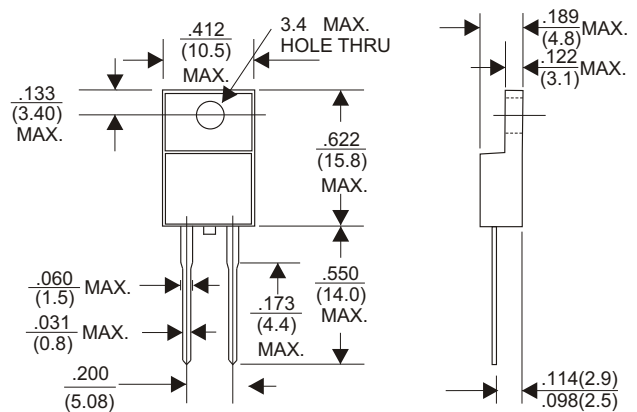
- Switching mode power supply, AC/DC converter
- Power factor correction
- Motor drive
- PV inverter and wind turbine

### Advantages

- Very low switching loss
- Higher efficiency
- Low dependence of the system on the heat sink
- No thermal collapse in parallel devices



### iTO-220AC(FULLYINSULATED)



### Absolute Maximum Rating (Ta=25°C)

Parameter	Symbol	Test conditions	Value	Unit
Peak repetitive reverse voltage	$V_{RRM}$		650	V
Working Peak Reverse voltage	$V_{RWM}$		650	V
DC Blocking Voltage	$V_{DC}$		650	V
Average rectified output current	$I_{F(AV)}$	$T_C=25^\circ\text{C}$	22	A
		$T_C=125^\circ\text{C}$	17.5	
		$T_C=150^\circ\text{C}$	10	
Forward repetitive peak current	$I_{FRM}$	$T_C=25^\circ\text{C}$ , $t_p=10\text{ms}$ , Half Sine Wave	51	A
		$T_C=110^\circ\text{C}$ , $t_p=10\text{ms}$ , Half Sine Wave	46	
Forward surge current	$I_{FSM}$	$T_C=25^\circ\text{C}$ , $t_p=10\text{ms}$ , Half Sine Wave	67	A
		$T_C=110^\circ\text{C}$ , $t_p=10\text{ms}$ , Half Sine Wave	61	
Power dissipation	$P_{tot}$	$T_C=25^\circ\text{C}$	60	W
		$T_C=110^\circ\text{C}$	26	
Junction temperature	$T_j$		-55 ~ +175	°C
Storage temperature	$T_{stg}$		-55 ~ +175	°C

# GK10D650F

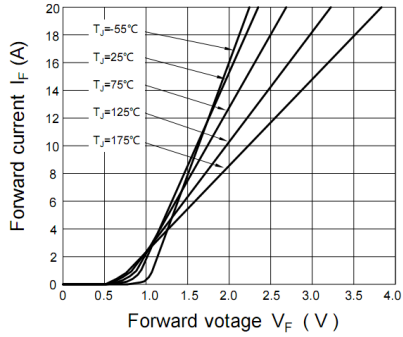
## Electrical Characteristics (Ta=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Forward voltage	$V_F$	$I_F = 10\text{ A}, T_j = 25^\circ\text{C}$ $I_F = 10\text{ A}, T_j = 175^\circ\text{C}$		1.4 1.66	1.6 2.0	V
Reverse current	$I_R$	$V_R = 650\text{V}, T_j = 25^\circ\text{C}$ $V_R = 650\text{V}, T_j = 175^\circ\text{C}$		2 10	50 200	$\mu\text{A}$
Total capacitive charge	$Q_C$	$V_R = 400\text{V}, I_F = 10\text{A}$ $di/dt = 500\text{A}/\mu\text{s}, T_j = 25^\circ\text{C}$		38		nC
Total capacitance	C	$V_R = 0\text{V}, T_j = 25^\circ\text{C}, f = 1\text{MHz}$ $V_R = 200\text{V}, T_j = 25^\circ\text{C}, f = 1\text{MHz}$ $V_R = 400\text{V}, T_j = 25^\circ\text{C}, f = 1\text{MHz}$		683 88 82		pF

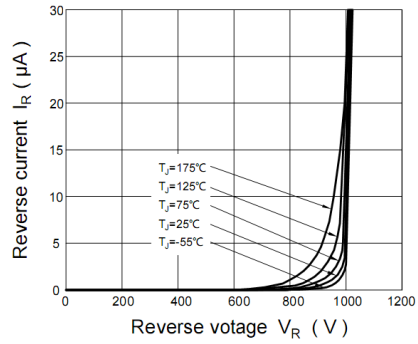
## Thermal characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance - Junction to Case	$R_{\theta JC}$		2.5		$^\circ\text{C}/\text{W}$

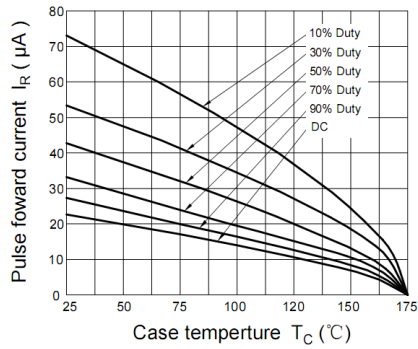
## RATING AND CHARACTERISTIC CURVES (GK10D650F)



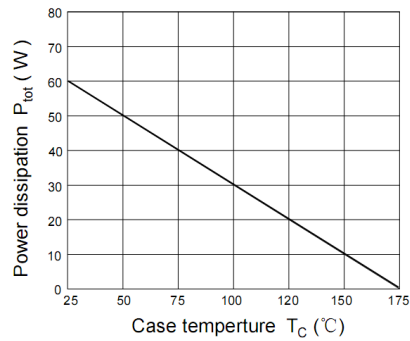
**Figure 1. Forward Characteristics**



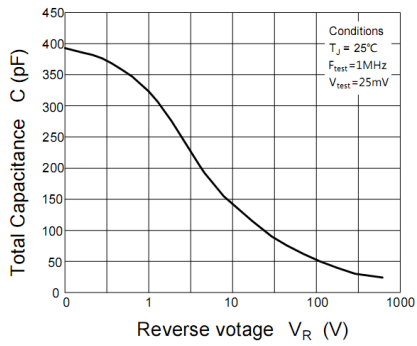
**Figure 2. Reverse Characteristics**



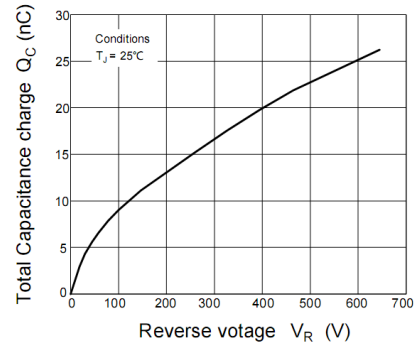
**Figure 3. Current Derating**



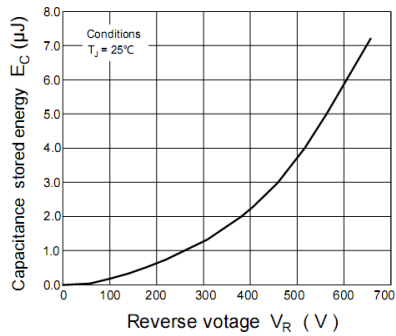
**Figure 4. Power Derating**



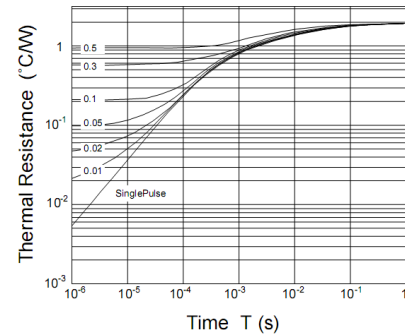
**Figure 5. Capacitance vs reverse voltage**



**Figure 6. Recovery Charge vs Reverse Voltage**



**Figure 7. Capacitance stored Energy**



**Figure 8. Thermal Impedance**