

### Features

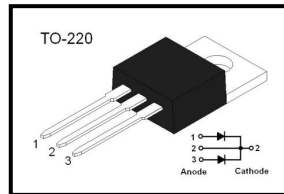
- Reverse withstand voltage 650V
- Zero reverse recovery current
- High working frequency
- Switch characteristics are not affected by temperature
- Fast switching speed
- Positive temperature coefficient of positive pressure drop

### Application

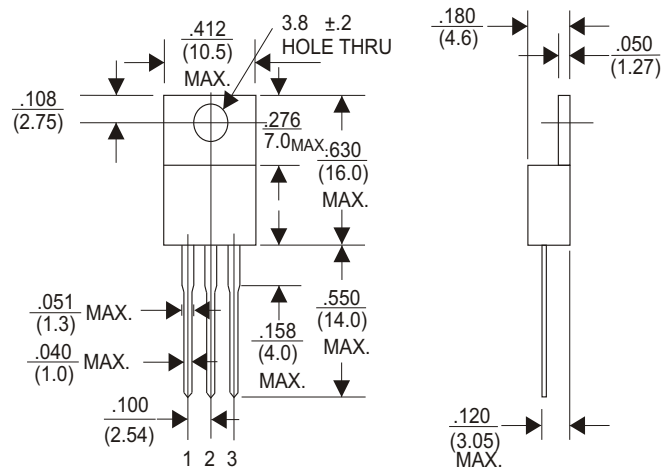
- Switching mode power supply, AC/DC converter
- Power factor correction
- Motor drive
- PV inverter and wind turbine

### Advantages

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



### TO-220



### 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	$I_{F(AV)}$	Ta=25°C	33	A
		Ta=125°C	15	
		Ta=150°C	10	
Forward repetitive peak current	$I_{FRM}$	T <sub>C</sub> =25°C, tp=10ms, Half Sine Wave	50	A
		T <sub>C</sub> =110°C, tp=10ms, Half Sine Wave	28	
Forward surge current	$I_{FSM}$	T <sub>C</sub> =25°C, tp=10ms, Half Sine Wave	90	A
		T <sub>C</sub> =110°C, tp=10ms, Half Sine Wave	65	
Power dissipation	$P_{tot}$	Ta=25°C	98	W
		Ta=110°C	45	
Junction temperature	T <sub>j</sub>		-55 ~ +175	°C
Storage temperature	T <sub>stg</sub>		-55 ~ +175	°C

# GK10D650B

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

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Forward voltage	$V_F$	$I_F = 10 \text{ A}, T_j = 25^\circ\text{C}$ $I_F = 10 \text{ A}, T_j = 175^\circ\text{C}$		1.45 1.61	1.6 1.8	V
Reverse current	$I_R$	$V_R = 650\text{V}, T_j = 25^\circ\text{C}$ $V_R = 650\text{V}, T_j = 175^\circ\text{C}$		1 12	60 220	$\mu\text{A}$
Total capacitive charge	$Q_C$	$V_R = 400\text{V}, I_F = 10\text{A}$ $di/dt = 500\text{A}/\mu\text{s}, T_j = 25^\circ\text{C}$		39		nC
Total capacitance	C	$V_R = 0\text{V}, T_j = 25^\circ\text{C}, f = 1\text{MHz}$ $V_R = 200\text{V}, T_j = 25^\circ\text{C}, f = 1\text{MHz}$ $V_R = 400\text{V}, T_j = 25^\circ\text{C}, f = 1\text{MHz}$		762 75 54		pF

## Thermal characteristics

Parameter	Symbol	Vaule	Unit
Thermal Resistance - Junction to Case	$R_{\theta JC}$	2.03	$^\circ\text{C}/\text{W}$

RATING AND CHARACTERISTIC CURVES (GK10D650B)

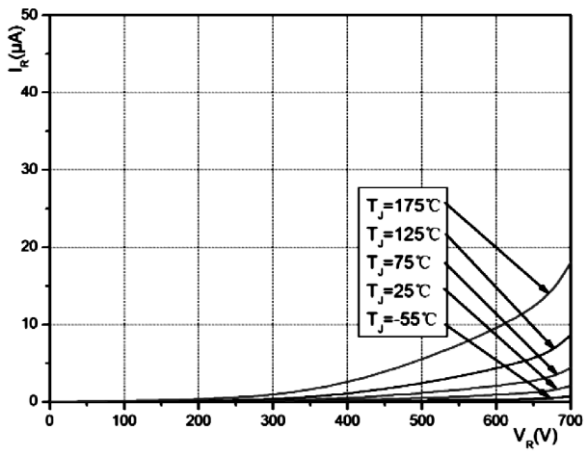


Figure 1. Forward Characteristics

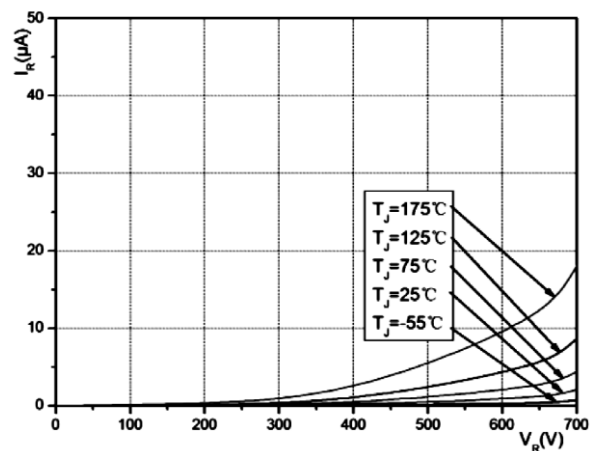


Figure 2. Reverse Characteristics

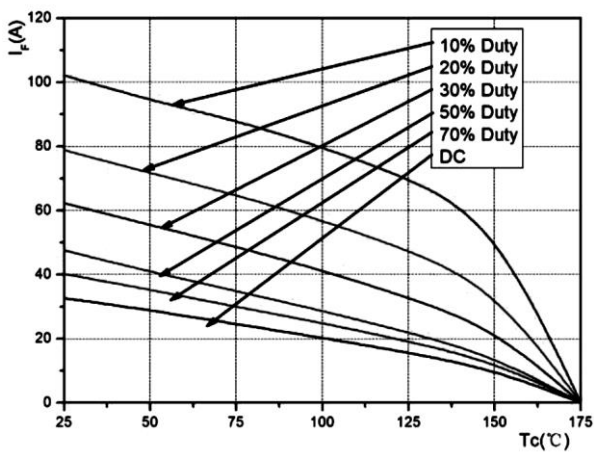


Figure 3. Load current

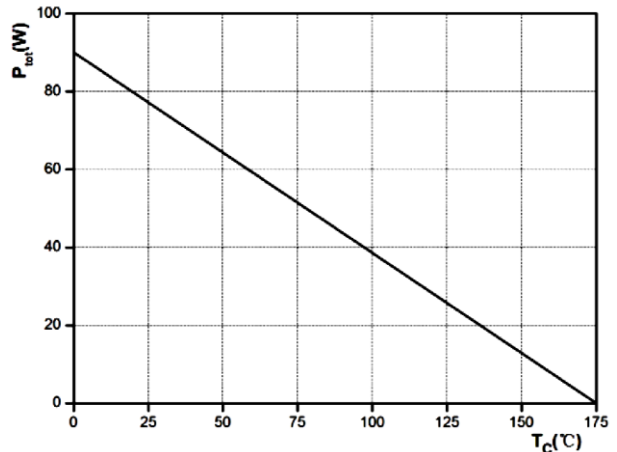


Figure 4. Dissipated power curve

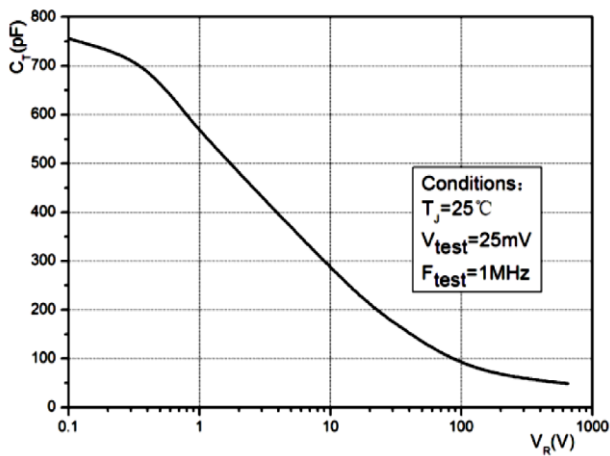


Figure 5. Capacitance vs reverse voltage

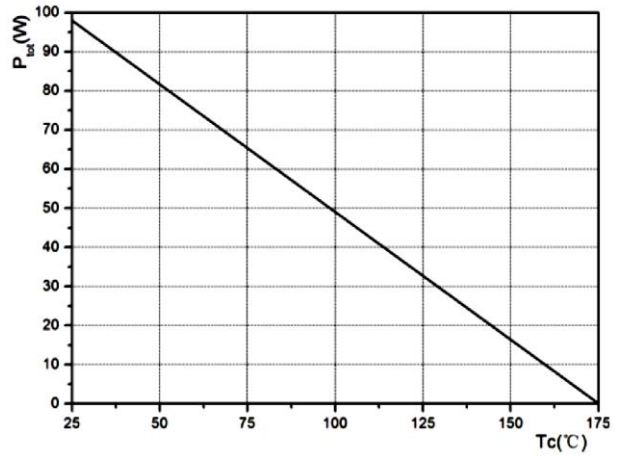


Figure 6. Thermal Impedance Junction-to-Case