

Features

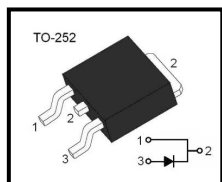
- Reverse withstand voltage 650V
- Zero reverse recovery current
- High working frequency
- Switch characteristics are not affected by temperature
- Fast switching speed
- Positive temperature coefficient of positive pressure drop

Application

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

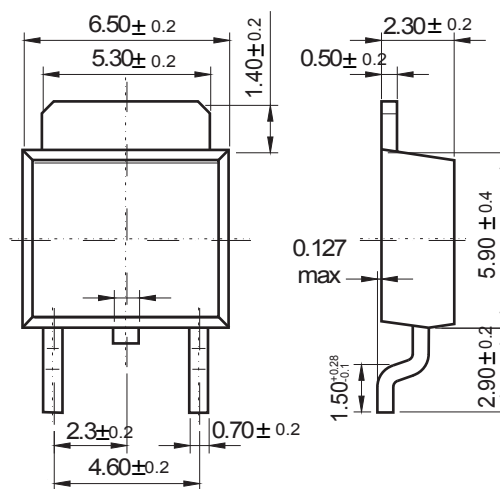
Advantages

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



TO-252

Unit: mm



Dimensions in inches and (millimeters)

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 Ta=125°C Ta=150°C	55 24 20	A
Forward repetitive peak current	I_{FRM}	T _C =25°C, tp=10ms, Half Sine Wave T _C =110°C, tp=10ms, Half Sine Wave	76 50	A
Forward surge current	I_{FSM}	T _C =25°C, tp=10ms, Half Sine Wave T _C =110°C, tp=10ms, Half Sine Wave	162 150	A
Power dissipation	P_{tot}	Ta=25°C Ta=110°C	120 55	W
Junction temperature	T _j		-55 ~ +175	°C
Storage temperature	T _{stg}		-55 ~ +175	°C

GK20D650E

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

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Forward voltage	V_F	$I_F = 20\text{ A}$, $T_J = 25^\circ\text{C}$ $I_F = 20\text{ A}$, $T_J = 175^\circ\text{C}$		1.5 2.0	1.8 2.4	V
Reverse current	I_R	$V_R = 650\text{V}$, $T_J = 25^\circ\text{C}$ $V_R = 650\text{V}$, $T_J = 175^\circ\text{C}$			60 220	μA
Total capacitive charge	Q_C	$V_R = 400\text{V}$, $I_F = 10\text{A}$ $di/dt = 500\text{A}/\mu\text{s}$, $T_J = 25^\circ\text{C}$		45		nC
Total capacitance	C	$V_R = 0\text{V}$, $T_J = 25^\circ\text{C}$, $f = 1\text{MHz}$ $V_R = 200\text{V}$, $T_J = 25^\circ\text{C}$, $f = 1\text{MHz}$ $V_R = 400\text{V}$, $T_J = 25^\circ\text{C}$, $f = 1\text{MHz}$		877 85 65		pF

Thermal characteristics

Parameter	Symbol	Vaule	Unit
Thermal Resistance - Junction to Case	$R_{\theta JC}$	1.51	$^\circ\text{C}/\text{W}$

RATING AND CHARACTERISTIC CURVES (GK20D650E)

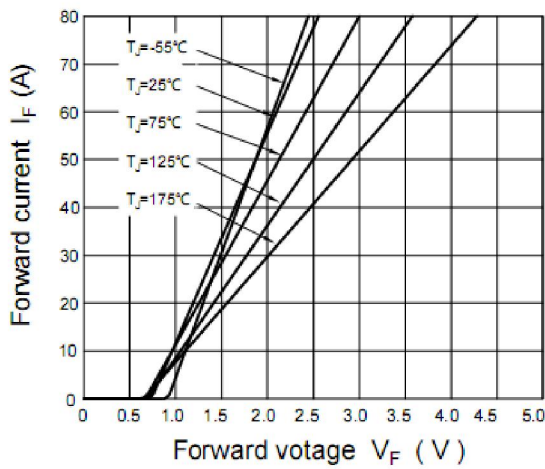


Figure 1. Forward Characteristics

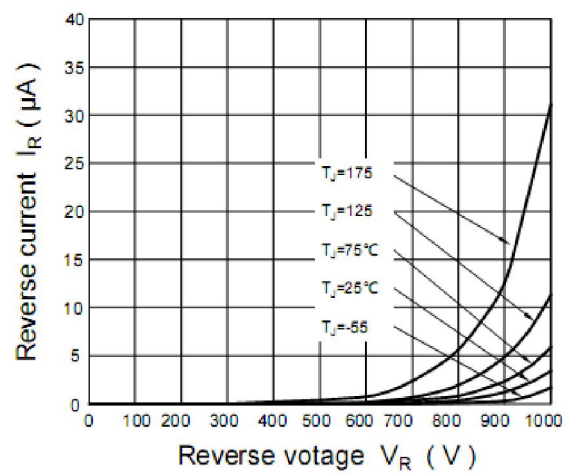


Figure 2. Reverse Characteristics

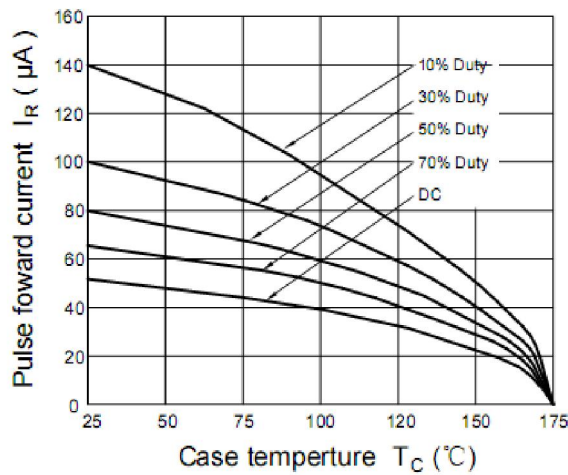


Figure 3. Current Derating

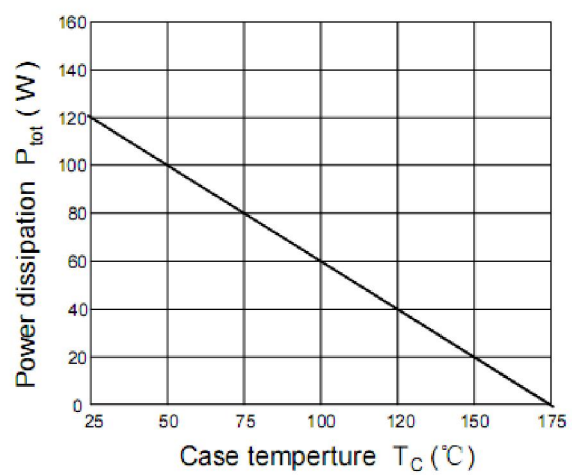


Figure 4. Power Derating

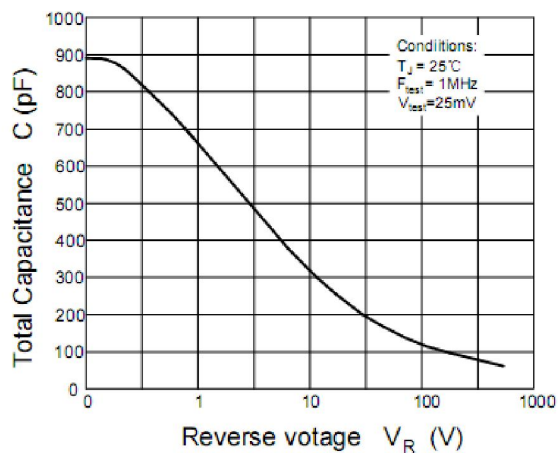


Figure 5. Capacitance vs reverse voltage

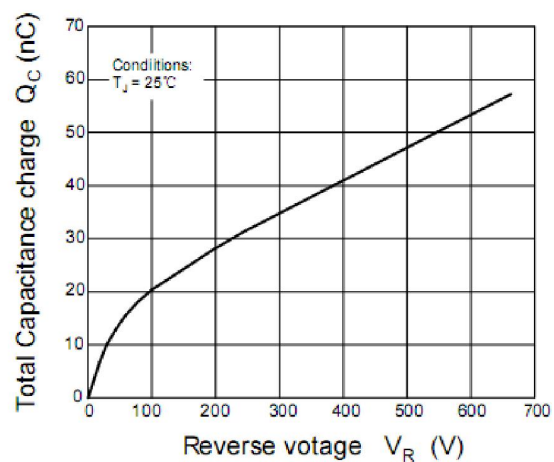


Figure 6. Total Capacitance charge vs. reverse voltage