



PFC Device Corporation

PCR6S650TD

6A 650V SiC Schottky Rectifier

Major ratings and characteristics

Characteristics	Values	Units
I_F	6	A
$V_{DC, max.}$	650	V
$Q_C; V_R=400V$	18	nC, typ.
$T_{J, max.}$	175	°C

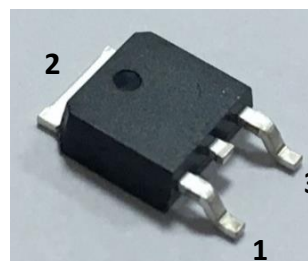
Features

- Higher efficiency
- Near zero switching loss
- Reliable High Temperature Operation
- 175°C Operating Junction Temperature
- Lead Free Finish, RoHS Compliant
- Green Molding Compound (No Br, Sb)

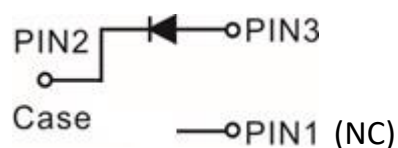
Typical Applications

- Switching mode power supply, UPS
- Power Factor Correction
- DC-DC Converter
- Output rectification
- Data Center

PCR6S650TD



TO-252 (DPAK)



1. Characteristics

Maximum Ratings Characteristics, at $T_C = 25^\circ\text{C}$ unless otherwise specified

Parameter	Symbol	Values	Units
Peak Repetitive Reverse Voltage	V_{RRM}	650	Volts
Continuous Forward Current for $R_{thJC, max.}$	I_F	6	Amps
Non-Repetitive Forward Surge Current, sine half wave $T_C=25^\circ\text{C}$, $t_p=10\text{ms}$ $T_C=110^\circ\text{C}$, $t_p=10\text{ms}$	I_{FSM}	66 57	Amps
i^2t value $T_C=25^\circ\text{C}$, $t_p=10\text{ms}$ $T_C=110^\circ\text{C}$, $t_p=10\text{ms}$	$\int i^2 dt$	21 16	A^2s
Power Dissipation, $T_C=25^\circ\text{C}$ $R_{\theta JC}$ typ.	P_{tot}	75	W
Operating Junction Temperature	T_J	- 55 to +175	$^\circ\text{C}$
Storage Junction Temperature	T_{STG}	- 55 to +175	

Thermal Characteristics

Parameter	Symbol	Typ.	Max.	Units
Thermal Resistance, Junction to Case	$R_{\theta JC}$	2	---	$^\circ\text{C} / \text{W}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	---	65	
Soldering Temperature, wave soldering only allowed at leads (1.6mm from case for 10s)	T_{solder}		260	$^\circ\text{C}$



Electrical Characteristics , at $T_A = 25^\circ\text{C}$ unless otherwise specified

Static Characteristics

Characteristics	Test Conditions	Symbol	Min.	Typ.	Max.	Units
DC Blocking Voltage	$I_R=0.5\text{mA}$, $T_J=25^\circ\text{C}$	V_{DC}	650	---	---	Volts
Diode Forward Voltage	$I_F=3\text{A}$, $T_J = 25^\circ\text{C}$	V_F	---	1.16	---	Volts
	$I_F=6\text{A}$, $T_J = 25^\circ\text{C}$		---	1.34	1.50	
	$I_F=6\text{A}$, $T_J = 125^\circ\text{C}$,		---	1.67	---	
Reverse Current	$V_R=650\text{V}$, $T_J = 25^\circ\text{C}$	I_R	---	1.2	50	μA
	$V_R=650\text{V}$, $T_J = 125^\circ\text{C}$		---	4.5	---	

Dynamic Characteristics ($T_C = 25^\circ\text{C}$ unless otherwise specified)

Characteristics	Test Conditions	Symbol	Min.	Typ.	Max.	Units
Total Capacitive Charge	$V_R=400\text{V}$, $T_J=25^\circ\text{C}$	Q_C	---	18	---	nC
Total Capacitance	$V_R=1\text{V}$, $f=1\text{ MHz}$	C	---	261	---	pF
	$V_R=200\text{V}$, $f=1\text{ MHz}$		---	35	---	
	$V_R=400\text{V}$, $f=1\text{ MHz}$		---	33	---	

2. Characteristics Curves

Ratings and Characteristics Curves, at $T_A = 25^\circ\text{C}$ unless otherwise specified

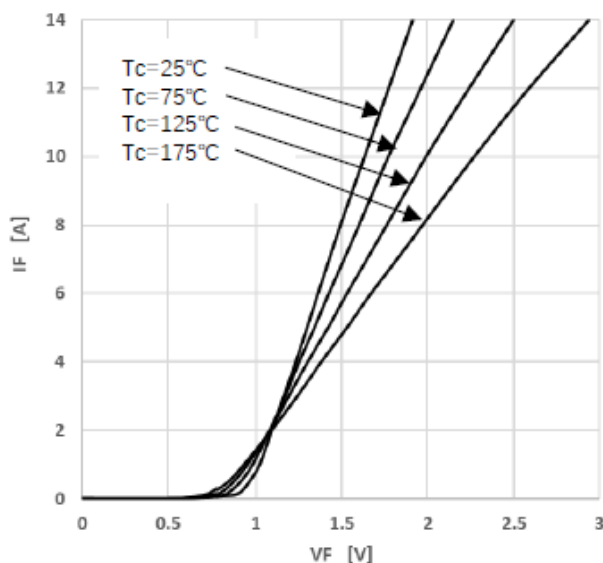


Fig. 1: Forward Characteristics

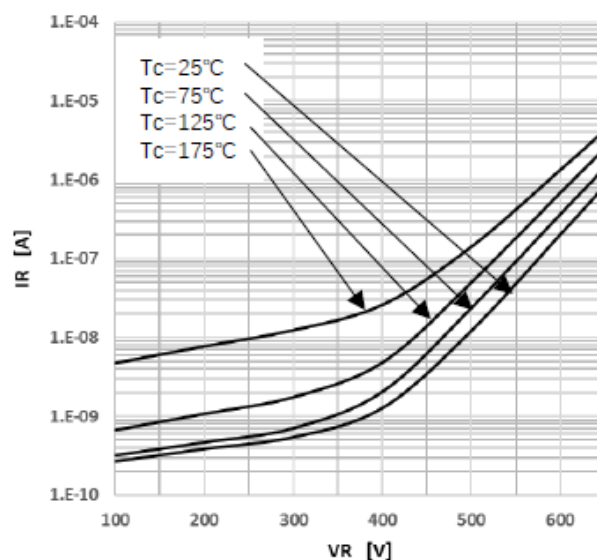


Fig. 2: Reverse Characteristics



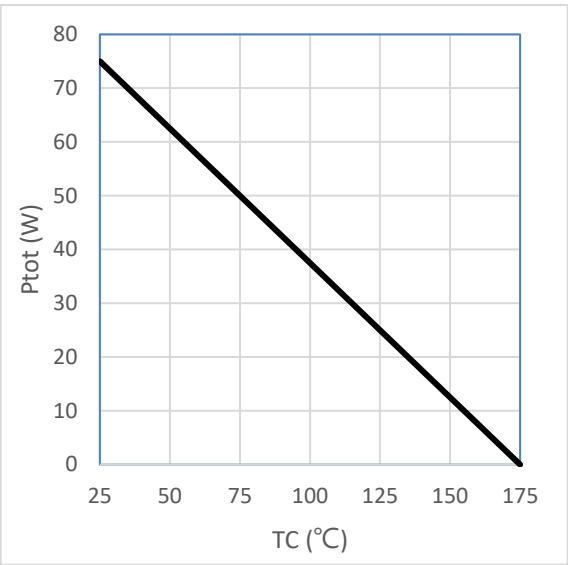


Fig 3: Power Dissipation

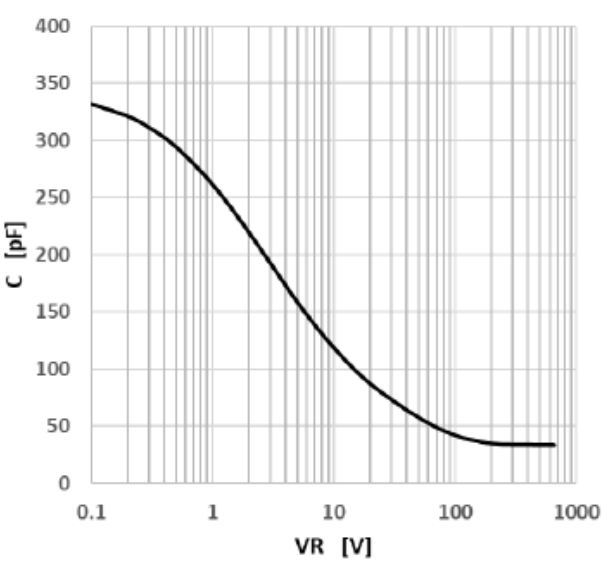


Fig 4: Typical Capacitance

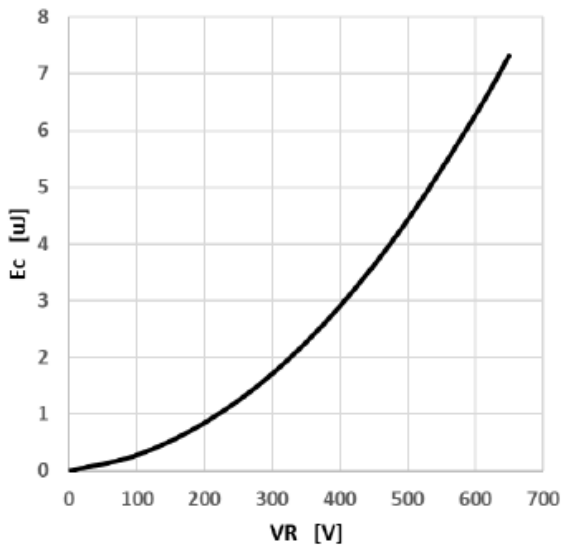


Fig 5: Typical Capacitance Stored Energy

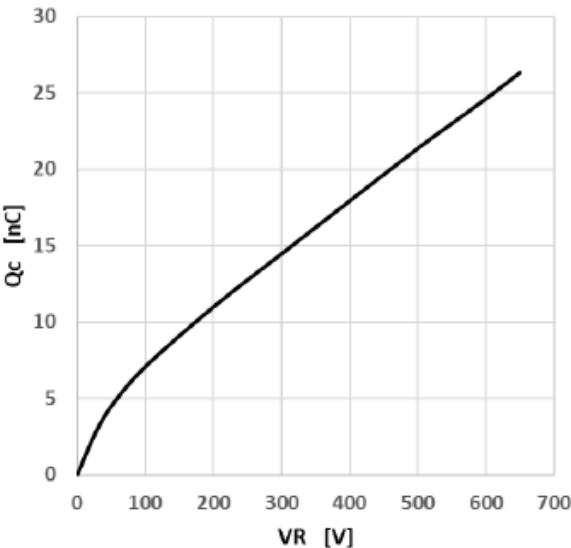
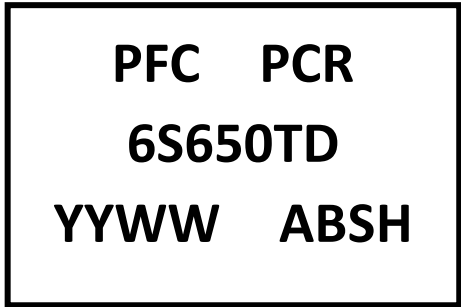


Fig 6: Capacitive Charge



3. Marking information

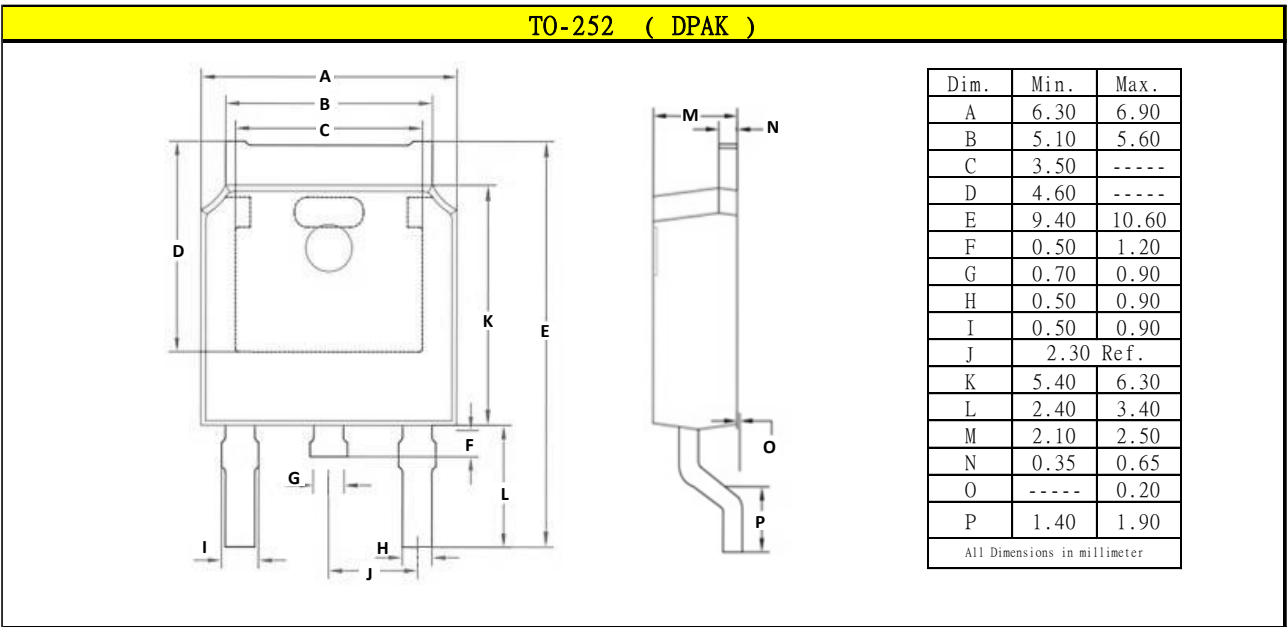
Top Marking Rule



PCR6S650TD = Product Type Marking Code
YYWW = Date Code
YY = Last two digits of year
WW = Week code
AB = Assembly code
S = Series Number
H = Halogen Free (N/A = common molding compound)

4. Package information

Package Outline Dimensions millimeters



5. Ordering information

Part Number	Package	Delivery mode
PCR6S650TD	TO-252 (D-PAK)	2500 pcs / 13" diameter reel

Mechanical

- Molder Plastic: UL Flammability Classification Rating 94V-0
- Device Weight : 0.01 ounces (0.3grams) - TO-252

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