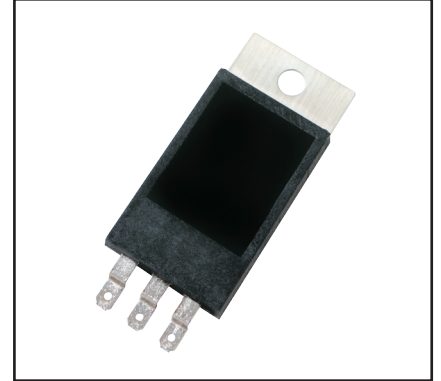
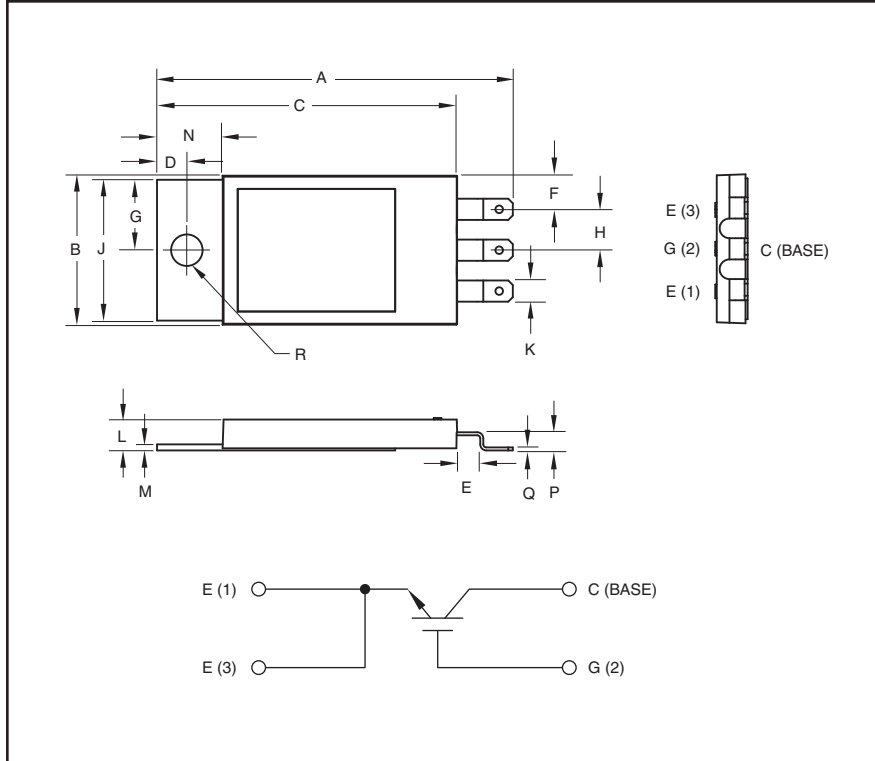


Powerex, Inc., 173 Pavilion Lane, Youngwood, Pennsylvania 15697 (724) 925-7272
www.pwr.com

HV Single Discrete IGBT 60 Amperes/4500 Volts



Description:

Powerex Single Non-isolated Discrete is designed specially for customer high voltage switching and pulse power applications.

Features:

- Low Drive Requirement
- Low $V_{CE(sat)}$
- Molybdenum Mounting Plate

Outline Drawing and Circuit Diagram

Dimensions	Inches	Millimeters
A	2.35	59.7
B	0.98	25.0
C	1.98	50.3
D	0.197	5.0
E	0.22	5.5
F	0.22	5.6
G	0.465	11.8
H	0.27	6.9

Dimensions	Inches	Millimeters
J	0.93	23.6
K	0.14	3.6
L	0.20	5.2
M	0.40	1.0
N	0.43	11.0
P	0.20	0.5
Q	0.12	3.0
R	0.208 Dia.	5.3 Dia.

QIS4506002
HV Single Discrete IGBT
 60 Amperes/4500 Volts

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

Ratings	Symbol	QIS4506002	Units
Collector Emitter Voltage	V_{CES}	4500	Volts
Gate Emitter Voltage	V_{GES}	± 20	Volts
Collector Current (DC, $T_C = 127^\circ\text{C}$)	I_C	60	Amperes
Peak Collector Current (Pulsed)	I_{CM}	120*	Amperes
Junction Temperature	T_j	-55 to 150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55 to 125	$^\circ\text{C}$
Mounting Torque, M5 Mounting Screws	—	30	in-lb
Weight (Typical)	—	20	Grams

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

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Collector Cutoff Current	I_{CES}	$V_{CE} = V_{CES}, V_{GE} = 0V$	—	—	1.0	mA
Gate Leakage Current	I_{GES}	$V_{GE} = V_{GES}, V_{CE} = 0V$	—	—	0.5	μA
Gate-Emitter Threshold Voltage	$V_{GE(th)}$	$I_C = 7\text{mA}, V_{CE} = 10V$	4.5	6.0	7.5	Volts
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 60\text{A}, V_{GE} = 15V, T_j = 25^\circ\text{C}$	—	3.0	3.9**	Volts
		$I_C = 60\text{A}, V_{GE} = 15V, T_j = 125^\circ\text{C}$	—	3.6	—	Volts
Total Gate Charge	Q_G	$V_{CC} = 2250V, I_C = 60\text{A}, V_{GE} = 15V$	—	450	—	nC

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

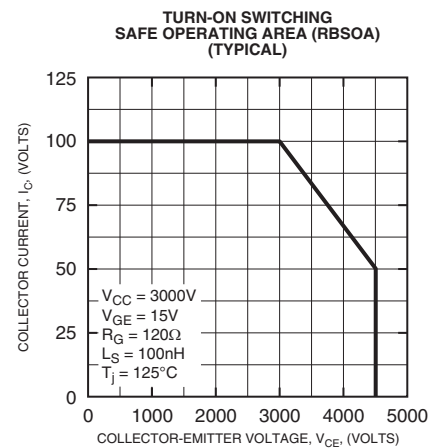
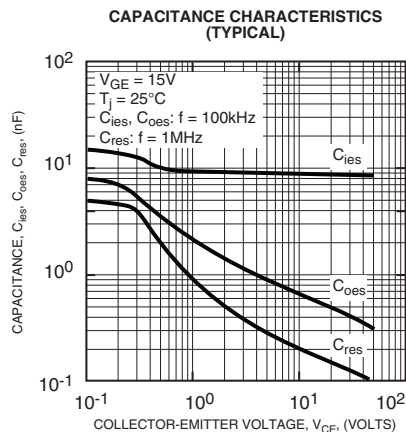
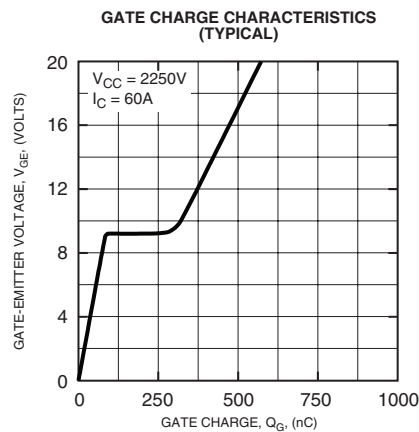
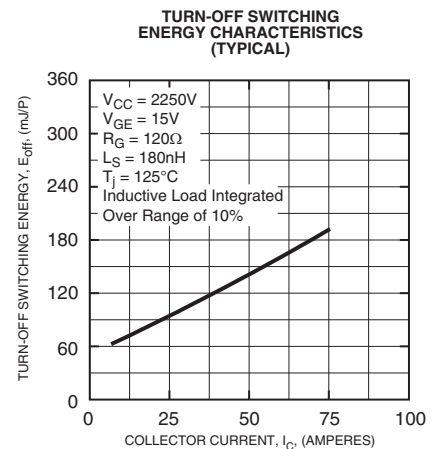
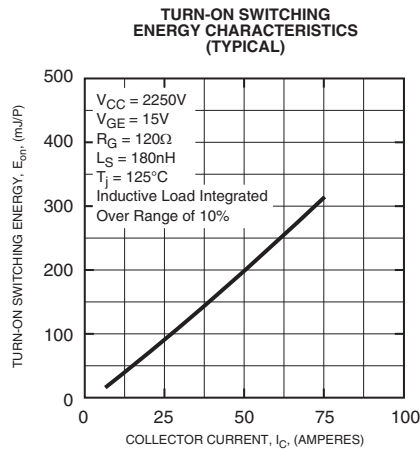
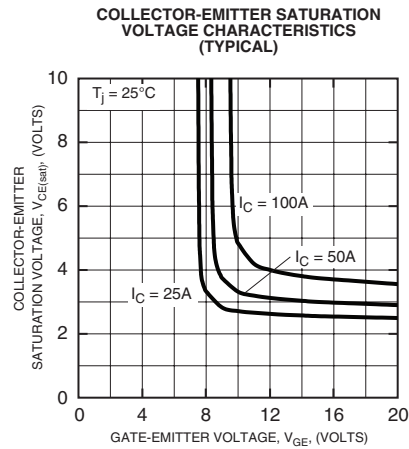
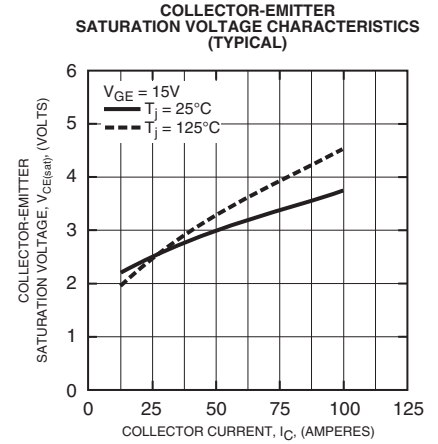
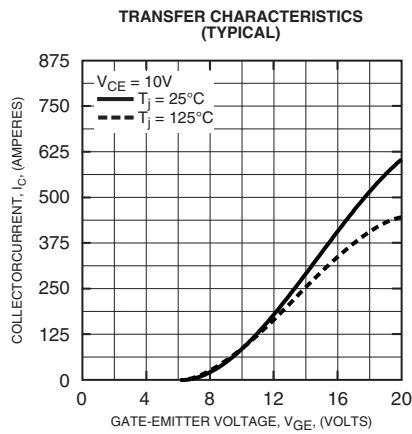
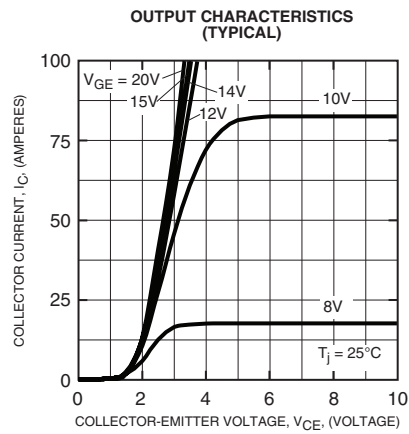
Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Input Capacitance	C_{ies}	$V_{GE} = 0V, V_{CE} = 10V$	—	9.0	—	nF
Output Capacitance	C_{oes}		—	0.65	—	nF
Reverse Transfer Capacitance	C_{res}		—	0.2	—	nF
Resistive	Turn-on Delay Time	$V_{CC} = 2250V,$ $I_C = 60\text{A},$	—	—	2.4	μs
	Rise Time					
Switching	Turn-off Delay Time	$V_{GE1} = V_{GE2} = 15V,$ $R_G = 120\Omega$	—	—	6.0	μs
	Fall Time					
Turn-on Switching Energy	E_{on}	$T_j = 125^\circ\text{C}, I_C = 60\text{A}, V_{CC} = 2250V,$	—	250	—	mJ/P
Turn-off switching Energy	E_{off}	$V_{GE} = \pm 15V, R_G = 120\Omega, L_S = 180\text{nH}$	—	170	—	mJ/P

Thermal and Mechanical Characteristics, $T_j = 25\text{ }^\circ\text{C}$ unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance, Junction to Case	$R_{th(j-c)}$	IGBT	—	0.10	TBD	$^\circ\text{C/W}$
Thermal Resistance, Case to Sink	$R_{th(c-s)}$	$\lambda_{grease} = 1\text{W/mK}$	—	0.10	—	$^\circ\text{C/W}$
Thermal Grease Applied						

* Pulse width and repetition rate should be such that device junction temperature (T_j) does not exceed device rating.
 ** Pulse width and repetition rate should be such that device junction temperature rise is negligible.

QIS4506002
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Information presented is based upon manufacturers testing and projected capabilities. This information is subject to change without notice. The manufacturer makes no claim as to the suitability of use, reliability, capability, or future availability of this product.