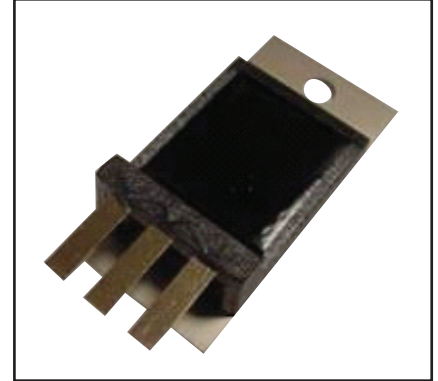
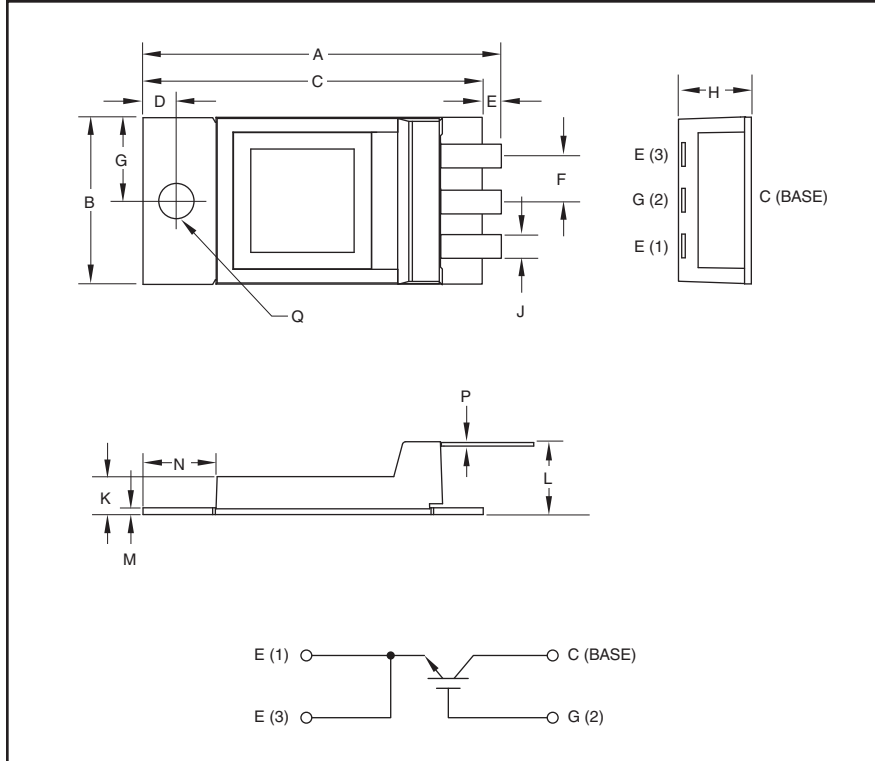


## Single Discrete IGBT 60 Amperes/4500 Volts



### 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	2.11	53.6
B	0.98	25.0
C	2.01	51.0
D	0.2	5.0
E.	0.1	2.5
F	0.27	6.9
G	0.49	12.5
H	0.46 Max.	11.8 Max.

Dimensions	Inches	Millimeters
J	0.14	3.6
K	0.22	5.7
L	0.43	10.8
M	0.04	1.0
N	0.43	10.9
P	0.02	0.5
Q	0.21 Dia.	5.3 Dia.

**QIS4506001**  
**Single Discrete IGBT**  
 60 Amperes/4500 Volts

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

Ratings	Symbol	QIS4506001	Units
Collector Emitter Voltage	$V_{CES}$	4500	Volts
Gate Emitter Voltage	$V_{GES}$	$\pm 20$	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	$\mu\text{A}$
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	$C_{ies}$		—	9.0	—	nF
Output Capacitance	$C_{oes}$	$V_{GE} = 0V, V_{CE} = 10V$	—	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	$\mu\text{s}$
	Rise Time					
Switching	Turn-off Delay Time	$V_{GE1} = V_{GE2} = 15V,$ $R_G = 120\Omega$	—	—	6.0	$\mu\text{s}$
	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**

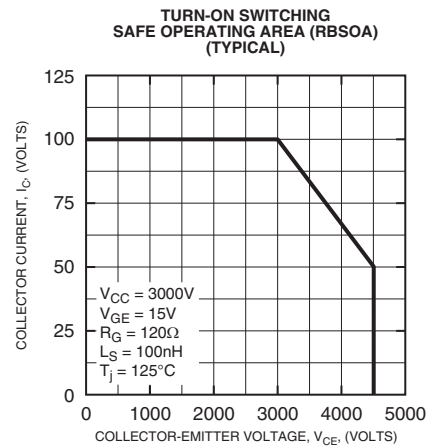
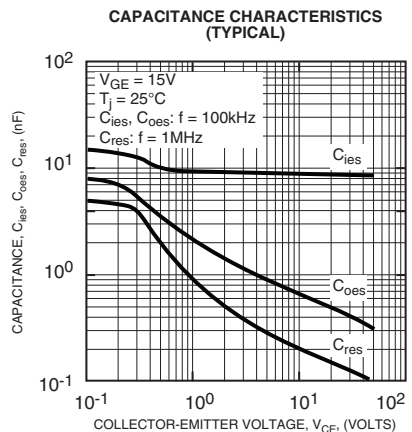
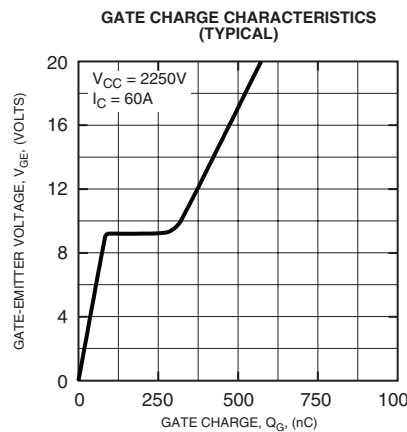
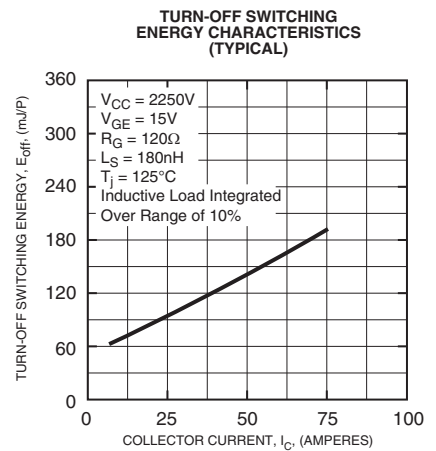
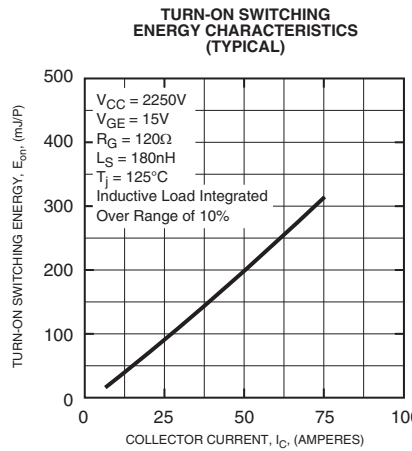
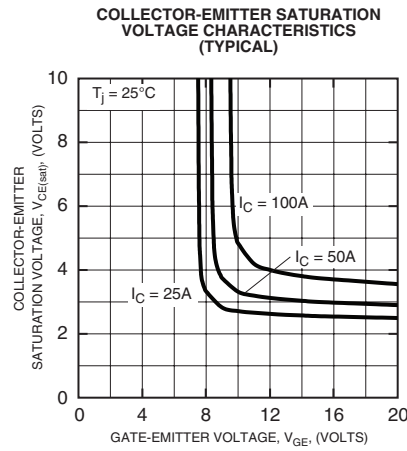
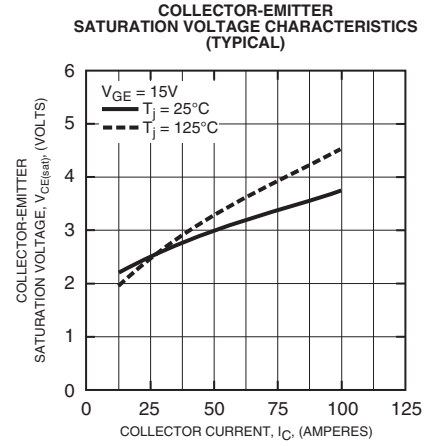
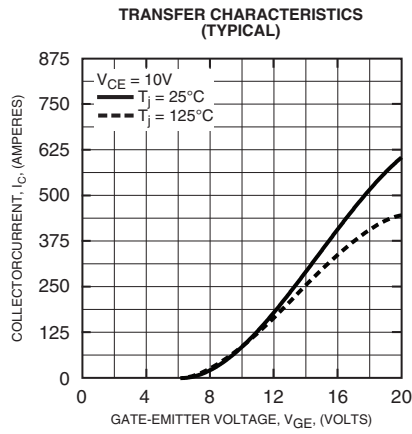
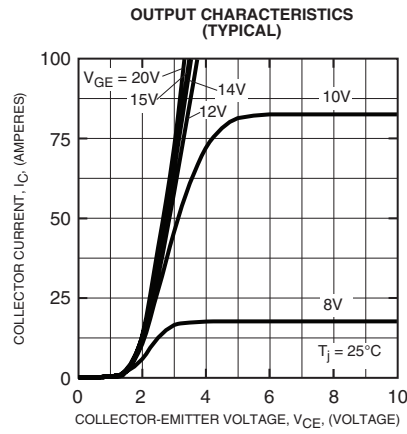
Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance, Junction to Case	$R_{th(j-c)}$	IGBT	—	0.10	TBD	$^\circ\text{C/W}$
Thermal Resistance, Case to Sink	$R_{th(c-s)}$	$\lambda_{grease} = 1\text{W/mK}$	—	0.10	—	$^\circ\text{C/W}$

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.

**QIS4506001**  
**Single Discrete IGBT**  
 60 Amperes/4500 Volts



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