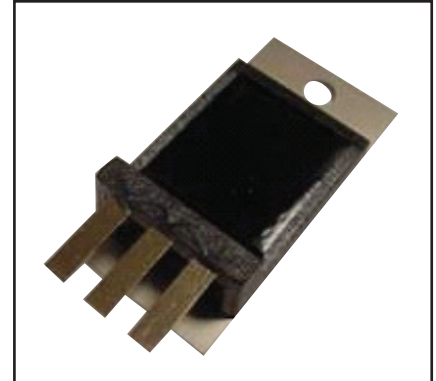
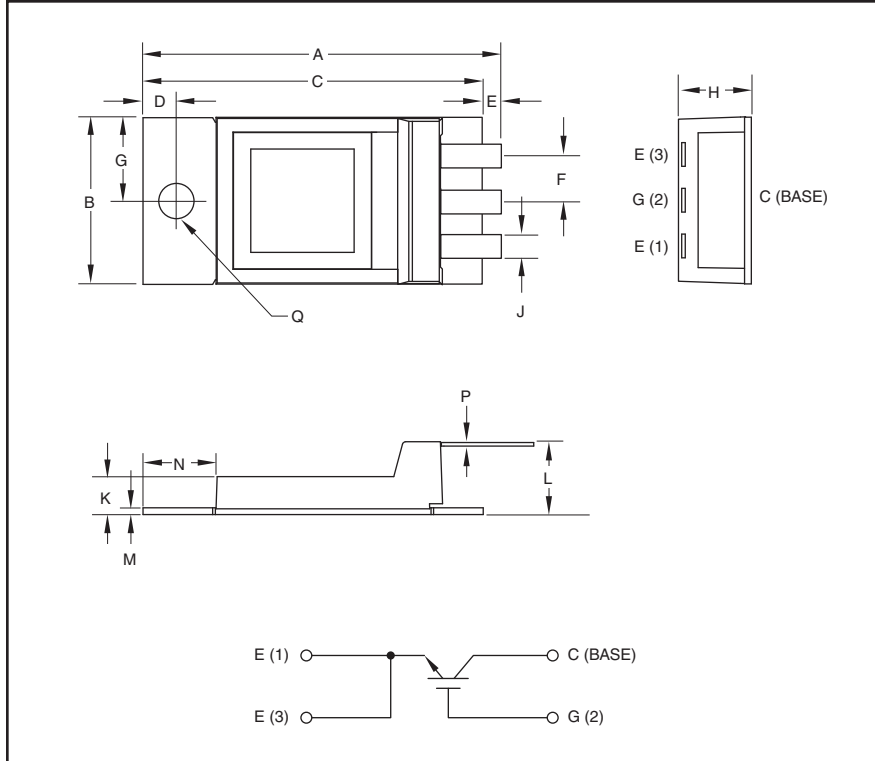


**Single Discrete IGBT**  
**60 Amperes/4500 Volts**



**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	$C_{ies}$	$V_{GE} = 0V, V_{CE} = 10V$	—	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	$\mu\text{s}$
	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**

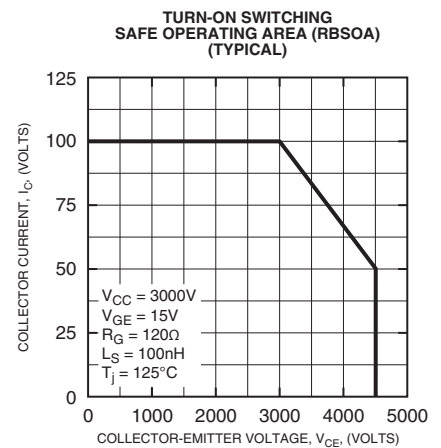
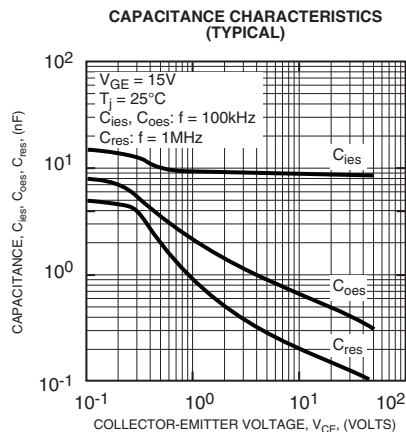
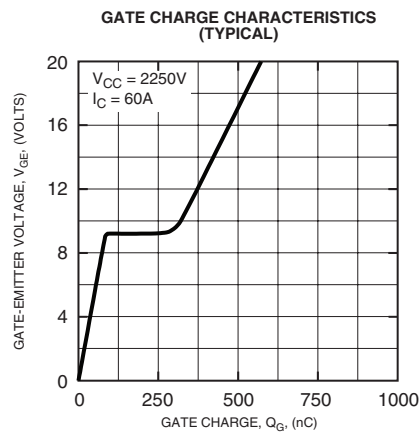
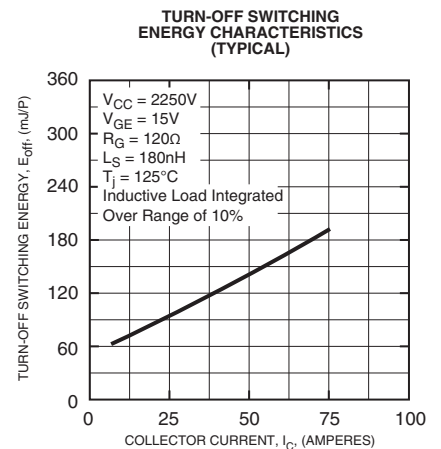
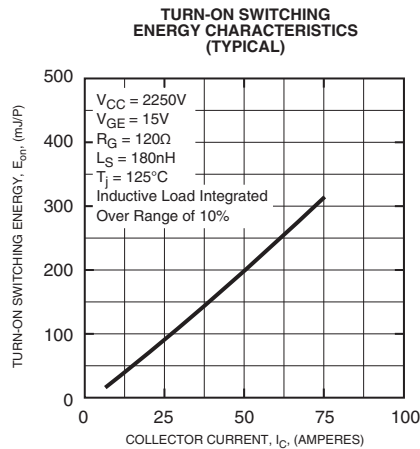
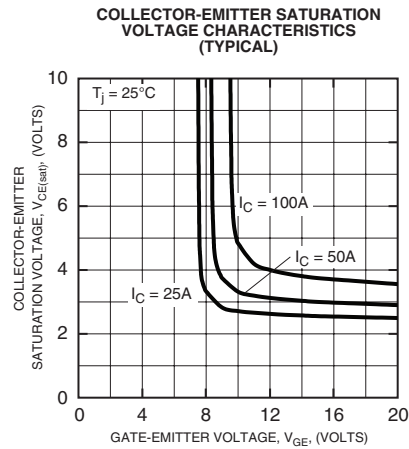
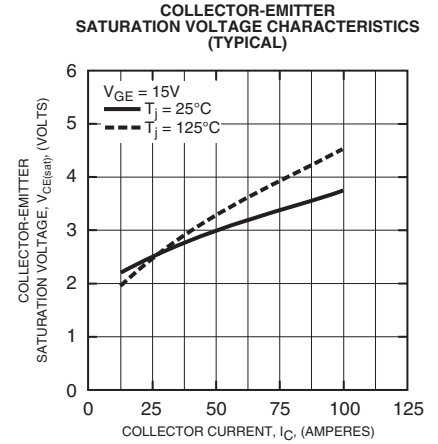
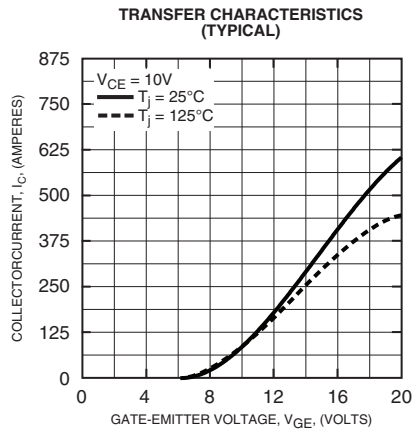
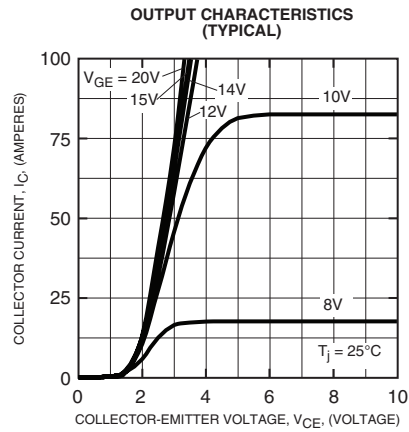
Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance, Junction to Case	$R_{th(j-c)}$	IGBT	—	0.10	TBD	$^\circ\text{C/W}$
Thermal Resistance, Case to Sink	$R_{th(c-s)}$	$\lambda_{grease} = 1\text{W/mK}$	—	0.10	—	$^\circ\text{C/W}$

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



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.