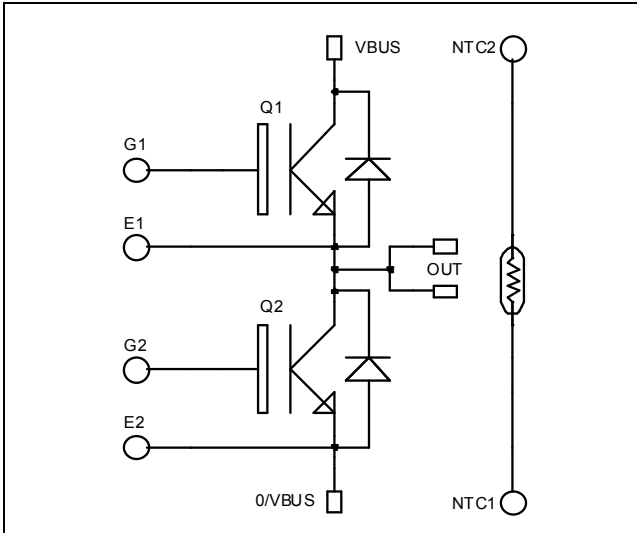


**Phase leg  
High speed Trench + Field Stop IGBT4  
Power Module**

**$V_{CES} = 1200V$   
 $I_C = 100A @ T_c = 80^\circ C$**


**Application**

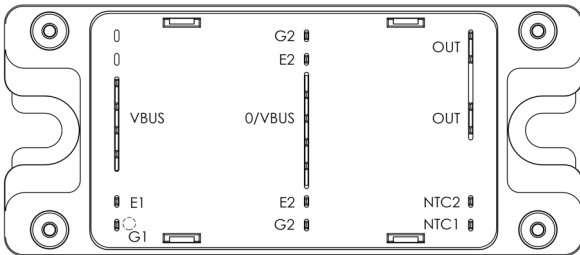
- Welding converters
- Switched Mode Power Supplies
- Uninterruptible Power Supplies
- Motor control

**Features**

- **High speed Trench + Field Stop IGBT 4 Technology**
  - Low voltage drop
  - Low leakage current
  - Low switching losses
- Kelvin emitter for easy drive
- Very low stray inductance
- Lead frames for power connections
- Internal thermistor for temperature monitoring

**Benefits**

- Stable temperature behavior
- Very rugged
- Solderable terminals for easy PCB mounting
- Direct mounting to heatsink (isolated package)
- Low junction to case thermal resistance
- Easy paralleling due to positive  $T_C$  of  $V_{CESat}$
- Low profile
- RoHS Compliant



**All ratings @  $T_j = 25^\circ C$  unless otherwise specified**

**Absolute maximum ratings (Per IGBT)**

Symbol	Parameter	Max ratings	Unit
$V_{CES}$	Collector - Emitter Voltage	1200	V
$I_C$	Continuous Collector Current	$T_C = 25^\circ C$	170
		$T_C = 80^\circ C$	100
$I_{CM}$	Pulsed Collector Current	$T_C = 25^\circ C$	340
$V_{GE}$	Gate - Emitter Voltage	$\pm 20$	V
$P_D$	Power Dissipation	520	W

**CAUTION:** These Devices are sensitive to Electrostatic Discharge. Proper Handling Procedures Should Be Followed.

**Electrical Characteristics (Per IGBT)**

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
I <sub>CEs</sub>	Zero Gate Voltage Collector Current	V <sub>GE</sub> = 0V, V <sub>CE</sub> = 1200V			50	μA
V <sub>CE(sat)</sub>	Collector Emitter Saturation Voltage	V <sub>GE</sub> = 15V I <sub>C</sub> = 100A	1.78	2.05	2.42	V
		T <sub>j</sub> = 25°C T <sub>j</sub> = 150°C		2.6		
V <sub>GE(th)</sub>	Gate Threshold Voltage	V <sub>GE</sub> = V <sub>CE</sub> , I <sub>C</sub> = 3.8 mA	5.1	5.8	6.4	V
I <sub>GES</sub>	Gate – Emitter Leakage Current	V <sub>GE</sub> = 20V, V <sub>CE</sub> = 0V			150	nA

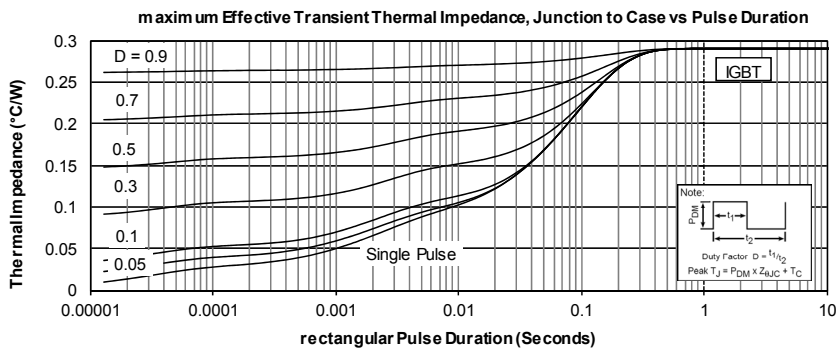
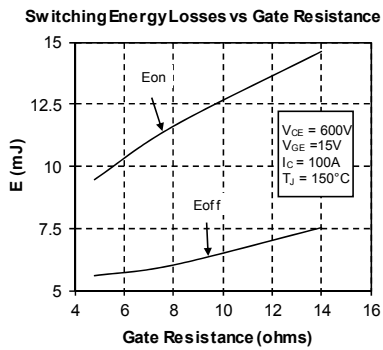
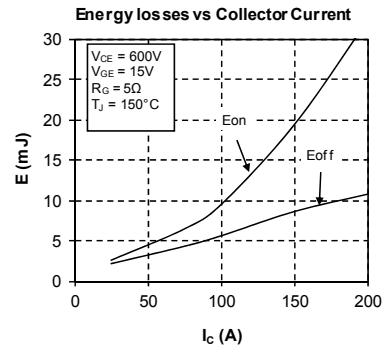
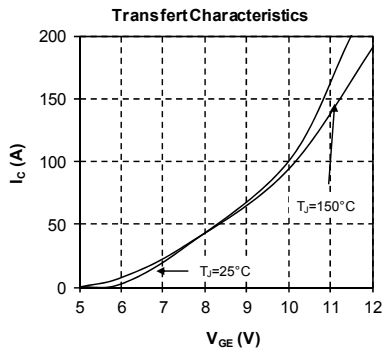
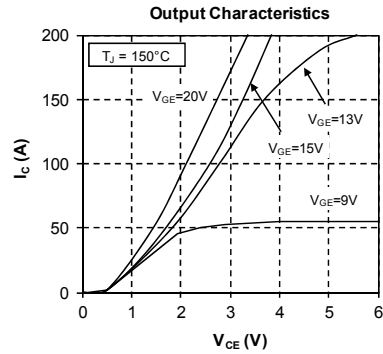
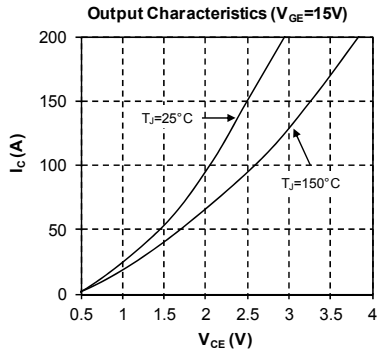
**Dynamic Characteristics (Per IGBT)**

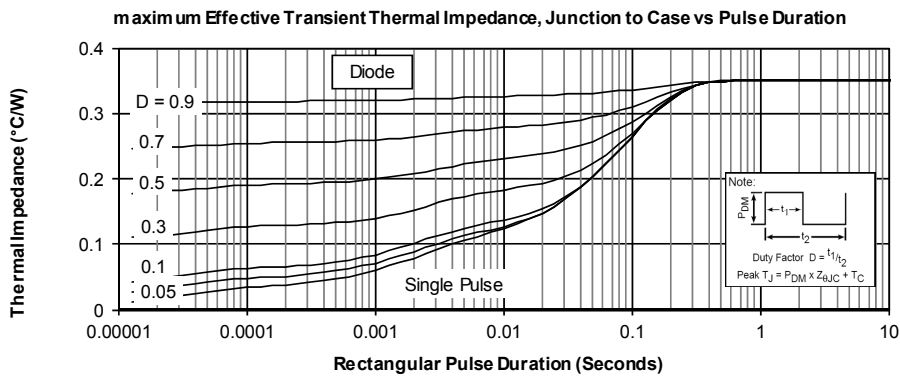
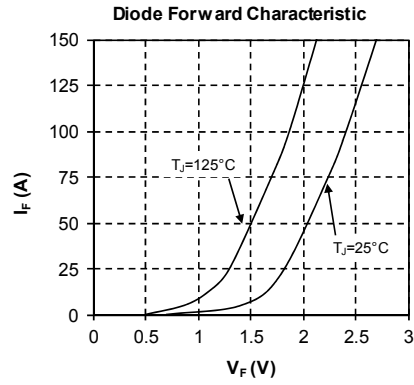
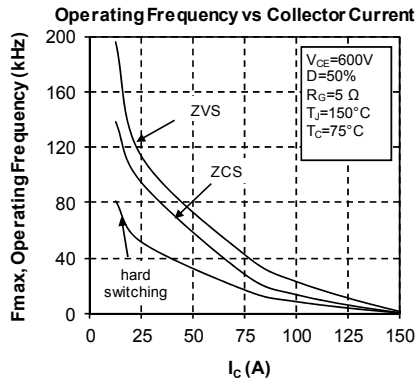
Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
C <sub>ies</sub>	Input Capacitance	V <sub>GE</sub> = 0V V <sub>CE</sub> = 25V f = 1MHz		6150		pF
C <sub>oes</sub>	Output Capacitance			460		
C <sub>res</sub>	Reverse Transfer Capacitance			345		
Q <sub>G</sub>	Gate charge	V <sub>GE</sub> = 15V, I <sub>C</sub> = 100A V <sub>CE</sub> = 960V		460		nC
T <sub>d(on)</sub>	Turn-on Delay Time	Inductive Switching (25°C) V <sub>GE</sub> = ±15V V <sub>Bus</sub> = 600V I <sub>C</sub> = 100A R <sub>G</sub> = 5Ω		30		ns
T <sub>r</sub>	Rise Time			57		
T <sub>d(off)</sub>	Turn-off Delay Time			290		
T <sub>f</sub>	Fall Time			16		
T <sub>d(on)</sub>	Turn-on Delay Time	Inductive Switching (150°C) V <sub>GE</sub> = ±15V V <sub>Bus</sub> = 600V I <sub>C</sub> = 100A R <sub>G</sub> = 5Ω		30		ns
T <sub>r</sub>	Rise Time			49		
T <sub>d(off)</sub>	Turn-off Delay Time			366		
T <sub>f</sub>	Fall Time			48		
E <sub>on</sub>	Turn on Energy	V <sub>GE</sub> = ±15V V <sub>Bus</sub> = 600V I <sub>C</sub> = 100A		9.5		mJ
E <sub>off</sub>	Turn off Energy	R <sub>G</sub> = 5Ω		5.6		
R <sub>G</sub>	Integrated gate resistor			7.5		Ω
I <sub>sc</sub>	Short Circuit data	V <sub>GE</sub> ≤ 15V ; V <sub>Bus</sub> = 600V t <sub>p</sub> ≤ 10μs ; T <sub>j</sub> = 150°C		350		A
R <sub>thJC</sub>	Junction to Case Thermal Resistance				0.29	°C/W

**Diode ratings and characteristics (per diode)**

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
V <sub>RRM</sub>	Peak Repetitive Reverse Voltage				1200	V
I <sub>RM</sub>	Reverse Leakage Current	V <sub>R</sub> = 1200V			100	μA
I <sub>F</sub>	DC Forward Current	T <sub>c</sub> = 60°C		100		A
V <sub>F</sub>	Diode Forward Voltage	I <sub>F</sub> = 100A		2.4	3.5	V
		I <sub>F</sub> = 150A		2.7		
		I <sub>F</sub> = 100A	T <sub>j</sub> = 125°C	1.8		
t <sub>rr</sub>	Reverse Recovery Time	I <sub>F</sub> = 100A V <sub>R</sub> = 800V di/dt = 200A/μs	T <sub>j</sub> = 25°C	385		ns
			T <sub>j</sub> = 125°C	480		
Q <sub>rr</sub>	Reverse Recovery Charge		T <sub>j</sub> = 25°C	1.05		μC
			T <sub>j</sub> = 125°C	5.24		
R <sub>thJC</sub>	Junction to Case Thermal Resistance				0.35	°C/W



**Typical performance curve**




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