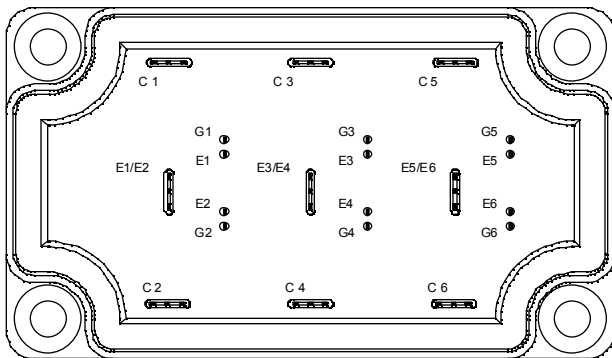
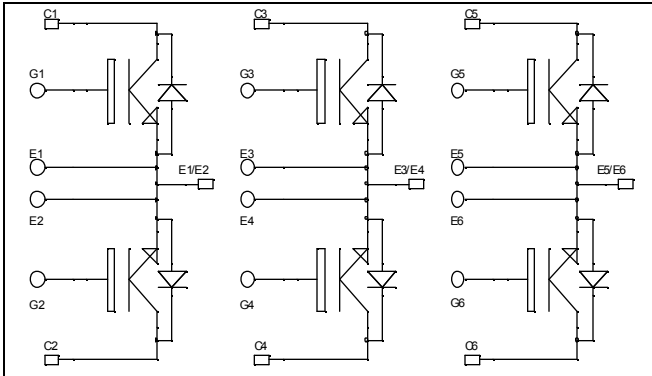


**Triple dual Common Source
NPT IGBT Power Module**

**$V_{CES} = 600V$
 $I_C = 90A @ T_c = 80^\circ C$**



Application

- AC Switches
- Switched Mode Power Supplies
- Uninterruptible Power Supplies

Features

- Non Punch Through (NPT) THUNDERBOLT IGBT®
 - Low voltage drop
 - Low tail current
 - Switching frequency up to 100 kHz
 - Soft recovery parallel diodes
 - Low diode VF
 - Low leakage current
 - Avalanche energy rated
 - RBSOA and SCSOA rated
- Kelvin emitter for easy drive
- Very low stray inductance
 - Symmetrical design
 - Lead frames for power connections
- High level of integration

Benefits

- Outstanding performance at high frequency operation
- Direct mounting to heatsink (isolated package)
- Low junction to case thermal resistance
- Solderable terminals both for power and signal for easy PCB mounting
- Very low (12mm) profile
- Easy paralleling due to positive TC of VCESat
- Each leg can be easily paralleled to achieve a dual common source configuration of three times the current capability

Absolute maximum ratings

Symbol	Parameter	Max ratings	Unit
V_{CES}	Collector - Emitter Breakdown Voltage	600	V
I_C	Continuous Collector Current	$T_c = 25^\circ C$	110
		$T_c = 80^\circ C$	90
I_{CM}	Pulsed Collector Current	$T_c = 25^\circ C$	315
V_{GE}	Gate - Emitter Voltage	± 20	V
P_D	Maximum Power Dissipation	$T_c = 25^\circ C$	416
RBSOA	Reverse Bias Safe Operating Area	$T_j = 150^\circ C$	315A @ 600V

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

All ratings @ $T_j = 25^\circ\text{C}$ unless otherwise specified

Electrical Characteristics

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
BV_{CES}	Collector - Emitter Breakdown Voltage	$V_{GE} = 0\text{V}, I_C = 100\mu\text{A}$	600			V
I_{CES}	Zero Gate Voltage Collector Current	$V_{GE} = 0\text{V}$ $V_{CE} = 600\text{V}$			100	μA
					1000	
$V_{CE(on)}$	Collector Emitter on Voltage	$V_{GE} = 15\text{V}$ $I_C = 90\text{A}$		2.0	2.5	V
				2.2		
$V_{GE(th)}$	Gate Threshold Voltage	$V_{GE} = V_{CE}, I_C = 1\text{mA}$	3		5	V
I_{GES}	Gate - Emitter Leakage Current	$V_{GE} = 20\text{V}, V_{CE} = 0\text{V}$			± 150	nA

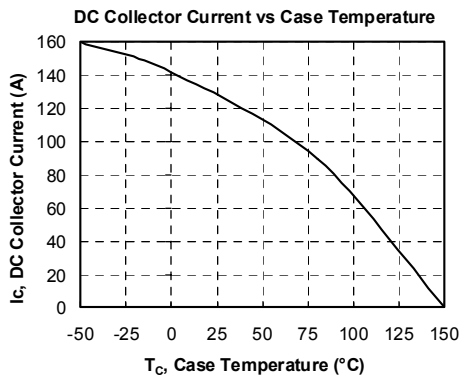
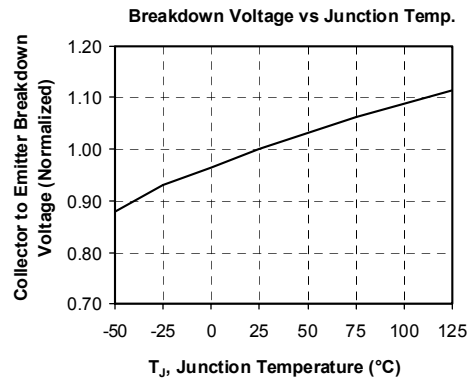
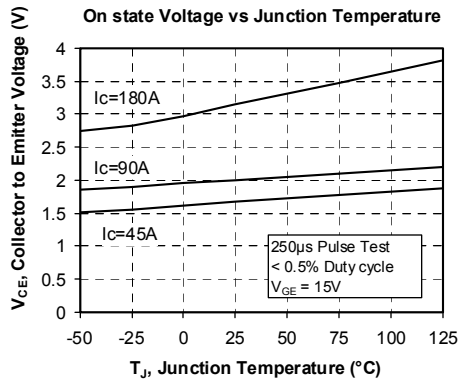
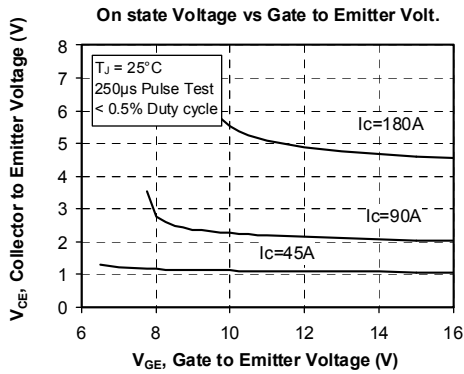
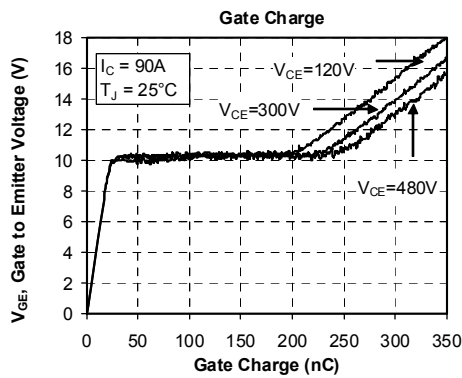
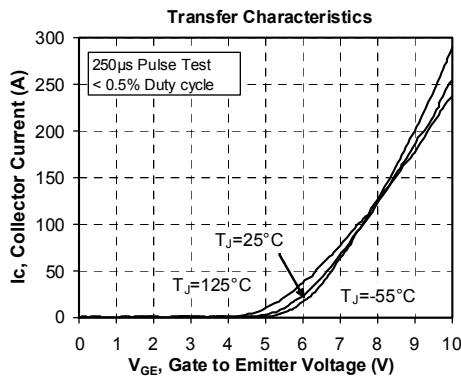
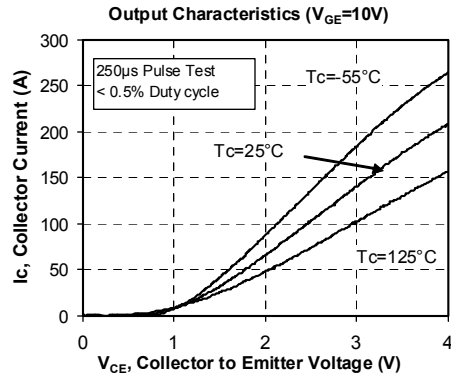
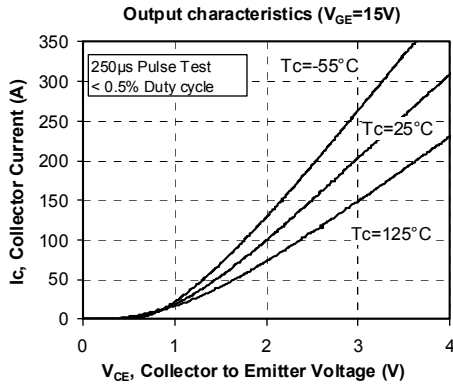
Dynamic Characteristics

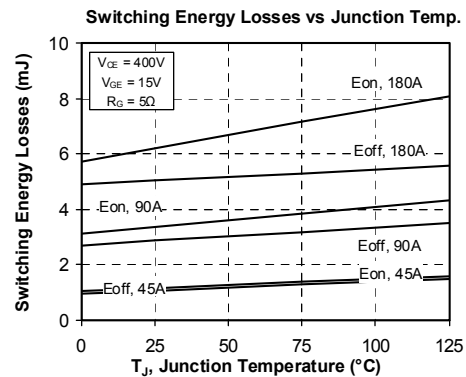
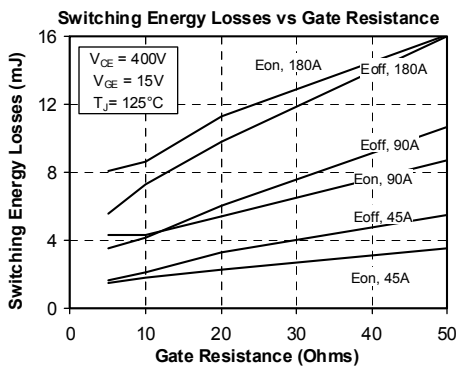
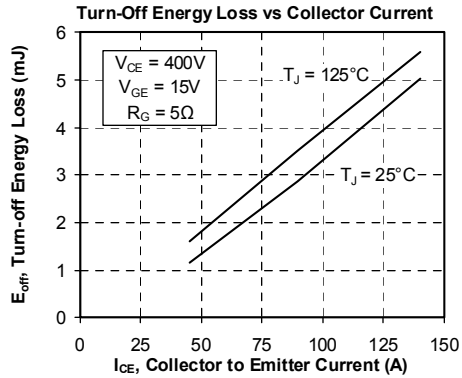
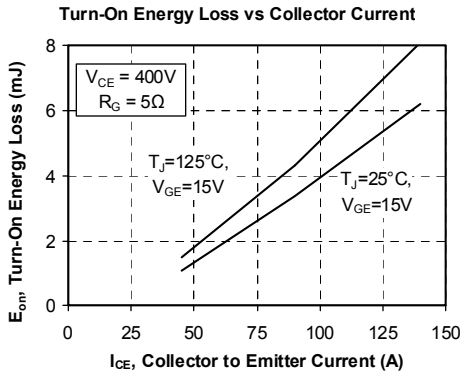
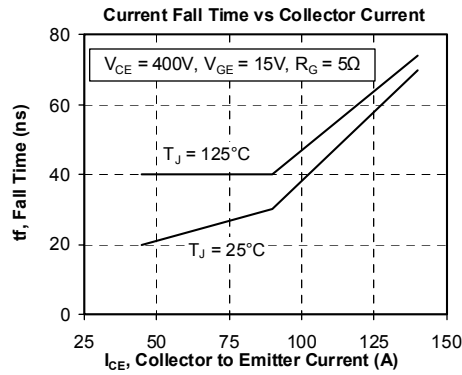
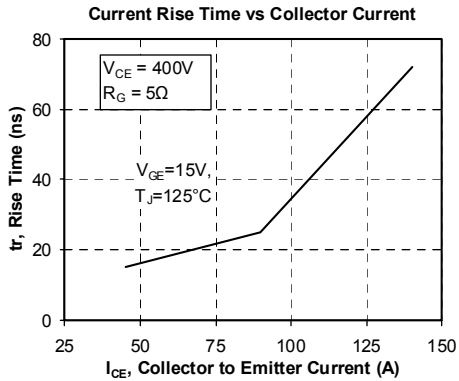
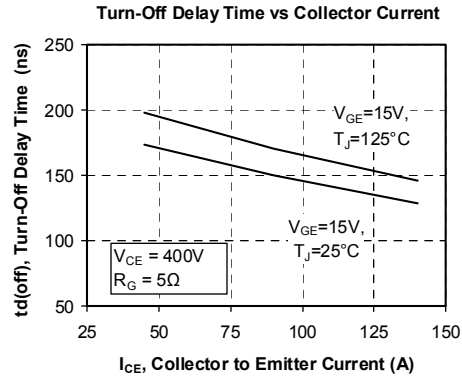
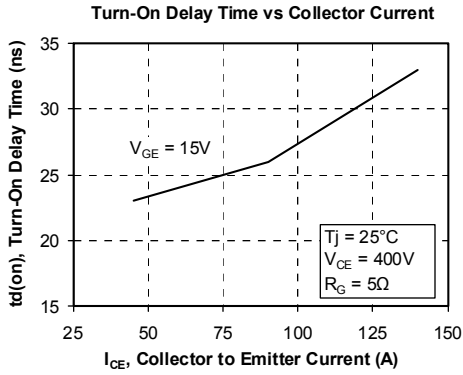
Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit	
C_{ies}	Input Capacitance	$V_{GE} = 0\text{V}$ $V_{CE} = 25\text{V}$ $f = 1\text{MHz}$		4300		pF	
C_{oes}	Output Capacitance			470			
C_{res}	Reverse Transfer Capacitance			400			
Q_g	Total gate Charge	$V_{GS} = 15\text{V}$ $V_{Bus} = 300\text{V}$ $I_C = 90\text{A}$		330		nC	
Q_{ge}	Gate - Emitter Charge			290			
Q_{gc}	Gate - Collector Charge			200			
$T_{d(on)}$	Turn-on Delay Time	Inductive Switching (25°C) $V_{GE} = 15\text{V}$ $V_{Bus} = 400\text{V}$ $I_C = 90\text{A}$ $R_G = 5\ \Omega$		26		ns	
T_r	Rise Time			25			
$T_{d(off)}$	Turn-off Delay Time			150			
T_f	Fall Time			30			
E_{on}	Turn-on Switching Energy ①			3.35			mJ
E_{off}	Turn-off Switching Energy ②			2.85			
$T_{d(on)}$	Turn-on Delay Time	Inductive Switching (125°C) $V_{GE} = 15\text{V}$ $V_{Bus} = 400\text{V}$ $I_C = 90\text{A}$ $R_G = 5\ \Omega$		26		ns	
T_r	Rise Time			25			
$T_{d(off)}$	Turn-off Delay Time			170			
T_f	Fall Time			40			
E_{on}	Turn-on Switching Energy ①			4.3			mJ
E_{off}	Turn-off Switching Energy ②			3.5			

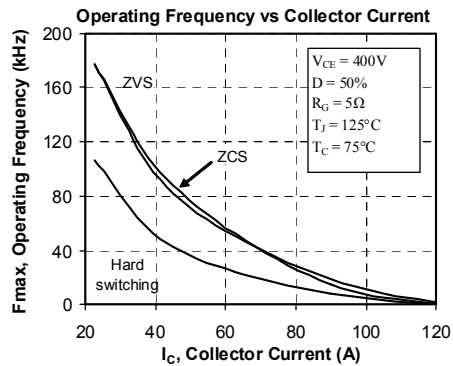
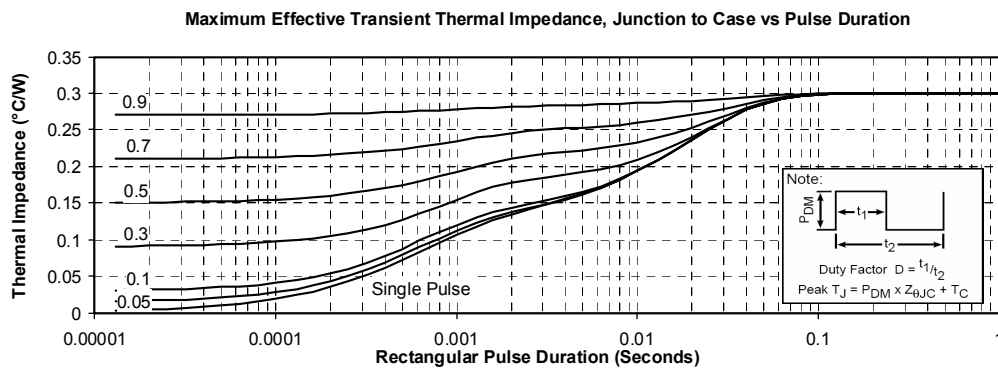
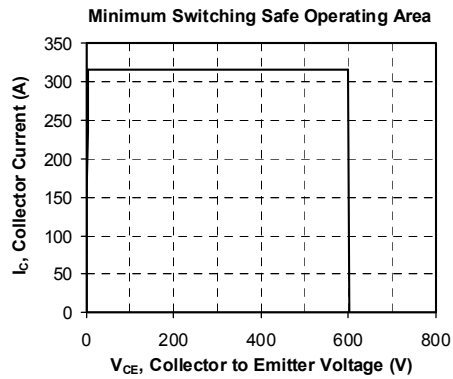
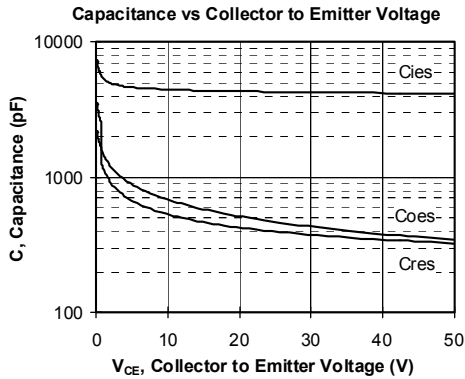
① E_{on} includes diode reverse recovery

② In accordance with JEDEC standard JESD24-1

Typical Performance Curve







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