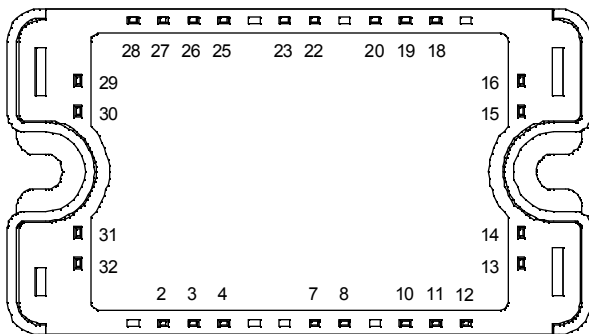
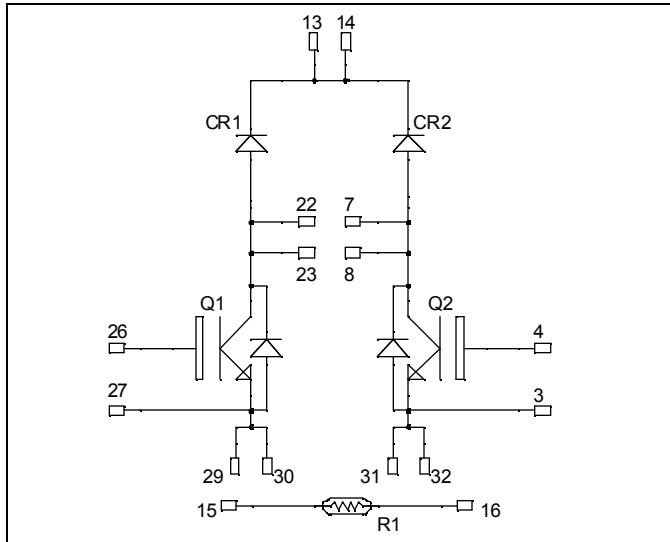


Dual Boost chopper PT IGBT Power Module

$$V_{CES} = 1200V$$

$$I_C = 30A @ T_c = 80^{\circ}C$$



All multiple inputs and outputs must be shorted together
Example: 13/14 ; 29/30 ; 22/23 ...

Application

- AC and DC motor control
- Switched Mode Power Supplies
- Power Factor Correction

Features

- Power MOS 7[®] Punch Through (PT) IGBT
 - Low conduction loss
 - Ultra fast tail current shutoff
 - Low gate charge
 - Switching frequency capability in the 200kHz range
 - Soft recovery parallel diodes
 - Low diode VF
- Kelvin emitter for easy drive
- Very low stray inductance
 - Symmetrical design
- Internal thermistor for temperature monitoring
- 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
- Low profile
- Each leg can be easily paralleled to achieve a single boost of twice the current capability.

Absolute maximum ratings

Symbol	Parameter	Max ratings	Unit
V_{CES}	Collector - Emitter Breakdown Voltage	1200	V
I_C	Continuous Collector Current	$T_c = 25^{\circ}C$	A
		$T_c = 80^{\circ}C$	
I_{CM}	Pulsed Collector Current	$T_c = 25^{\circ}C$	105
V_{GE}	Gate - Emitter Voltage	± 20	V
P_D	Maximum Power Dissipation	$T_c = 25^{\circ}C$	208
RBSOA	Reverse Bias Safe Operating Area	$T_j = 150^{\circ}C$	105A @ 960V

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

All ratings @ T_j = 25°C unless otherwise specified

Electrical Characteristics

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
BV _{CES}	Collector - Emitter Breakdown Voltage	V _{GE} = 0V, I _C = 250μA	1200			V
I _{CES}	Zero Gate Voltage Collector Current	V _{GE} = 0V V _{CE} = 1200V			250 2500	μA
V _{CE(on)}	Collector Emitter on Voltage	V _{GE} = 15V I _C = 30A		3.3 3.0	3.9	V
V _{GE(th)}	Gate Threshold Voltage	V _{GE} = V _{CE} , I _C = 1 mA	3		6	V
I _{GES}	Gate - Emitter Leakage Current	V _{GE} = ±20V, V _{CE} = 0V			±100	nA

Dynamic Characteristics

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
C _{ies}	Input Capacitance	V _{GE} = 0V		3240		pF
C _{oes}	Output Capacitance	V _{CE} = 25V		248		
C _{res}	Reverse Transfer Capacitance	f = 1MHz		31		
Q _g	Total gate charge	V _{GE} = 15V		150		nC
Q _{ge}	Gate - Emitter Charge	V _{Bus} = 600V		21		
Q _{gc}	Gate - Collector Charge	I _C = 30A		62		
T _{d(on)}	Turn-on Delay Time	Inductive Switching (25°C) V _{GE} = 15V V _{Bus} = 600V I _C = 30A R _G = 5Ω		16		ns
T _r	Rise Time			20		
T _{d(off)}	Turn-off Delay Time			94		
T _f	Fall Time			40		
E _{on1}	Turn-on Switching Energy			750		μJ
E _{on2}	Turn-on Switching Energy ❶			1305		
E _{off}	Turn-off Switching Energy ❷			680		
T _{d(on)}	Turn-on Delay Time	Inductive Switching (125°C) V _{GE} = 15V V _{Bus} = 600V I _C = 30A R _G = 5Ω		16		ns
T _r	Rise Time			20		
T _{d(off)}	Turn-off Delay Time			147		
T _f	Fall Time			75		
E _{on1}	Turn-on Switching Energy			750		μJ
E _{on2}	Turn-on Switching Energy ❶			2132		
E _{off}	Turn-off Switching Energy ❷			1744		

❶ E_{on2} includes diode reverse recovery

❷ In accordance with JEDEC standard JESD24-1

Temperature sensor NTC

Symbol	Characteristic	Min	Typ	Max	Unit
R ₂₅	Resistance @ 25°C		68		kΩ
B _{25/85}	T ₂₅ = 298.16 K		4080		K

$$R_T = \frac{R_{25}}{\exp \left[B_{25/85} \left(\frac{1}{T_{25}} - \frac{1}{T} \right) \right]}$$

T: Thermistor temperature

R_T: Thermistor value at T

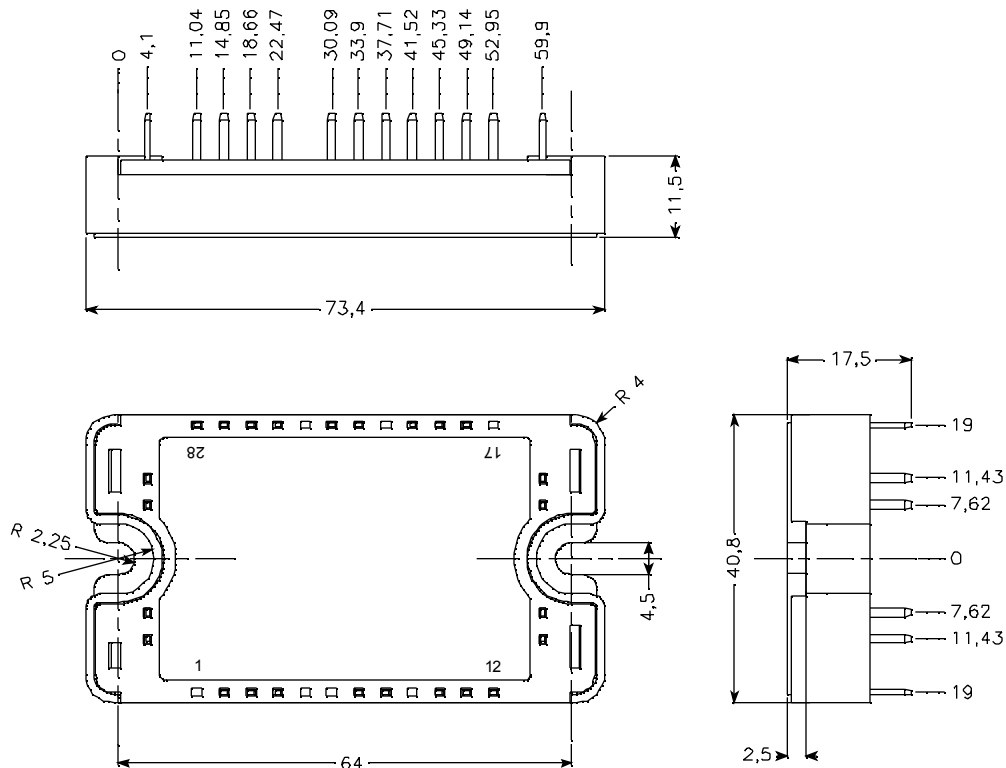
Diode ratings and characteristics

Symbol	Characteristic	Test Conditions		Min	Typ	Max	Unit
V _{RRM}	Maximum Peak Repetitive Reverse Voltage			1200			V
I _{RM}	Maximum Reverse Leakage Current	V _R =1200V	T _j = 25°C			250	μA
			T _j = 125°C			500	
I _{F(AV)}	Maximum Average Forward Current	50% duty cycle	T _c = 70°C		60		A
V _F	Diode Forward Voltage	I _F = 60A			2	2.5	V
		I _F = 120A			2.3		
		I _F = 60A	T _j = 125°C		1.8		
t _{rr}	Reverse Recovery Time	I _F = 60A V _R = 800V di/dt =200A/μs	T _j = 25°C		400		ns
			T _j = 125°C		470		
Q _{rr}	Reverse Recovery Charge		T _j = 25°C		1200		nC
			T _j = 125°C		4000		

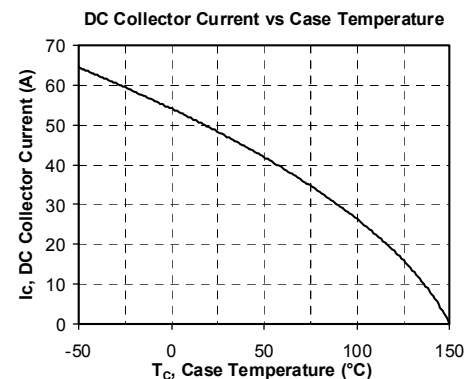
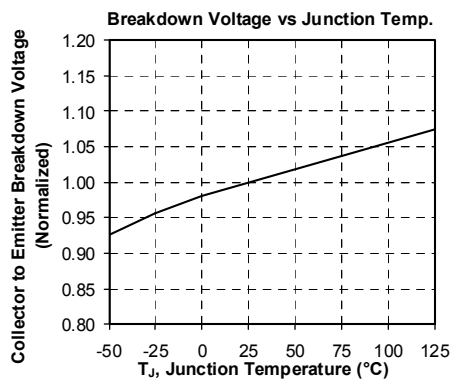
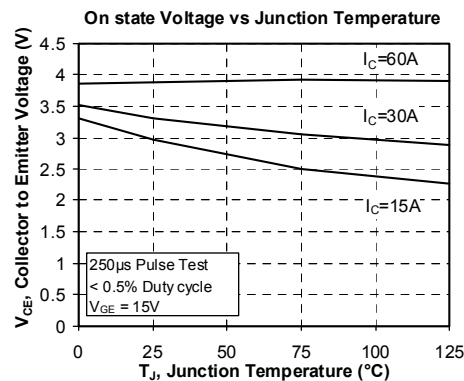
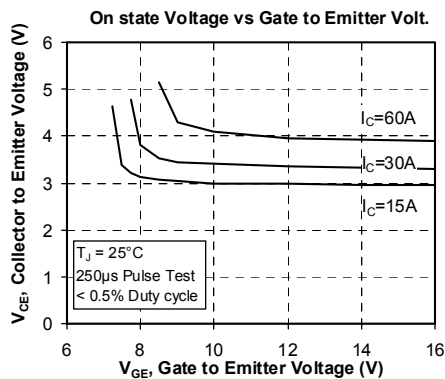
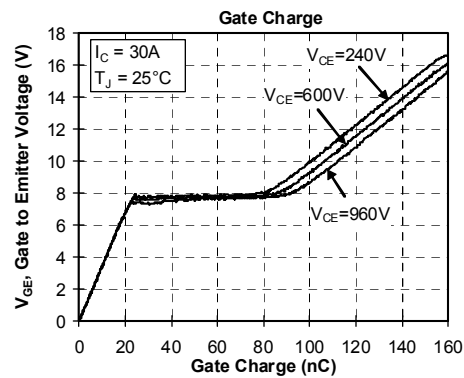
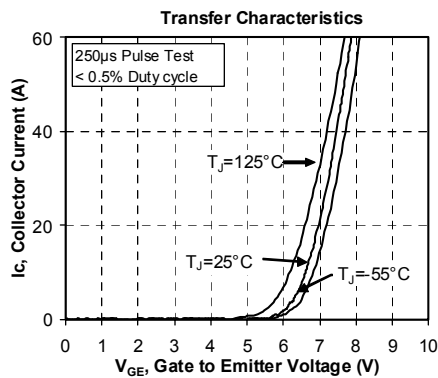
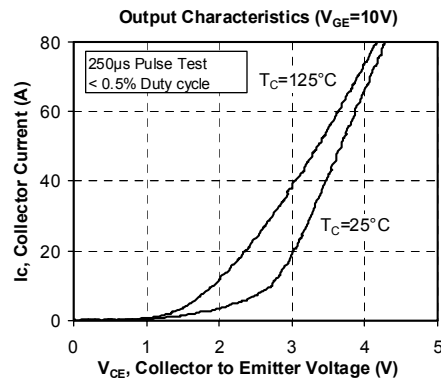
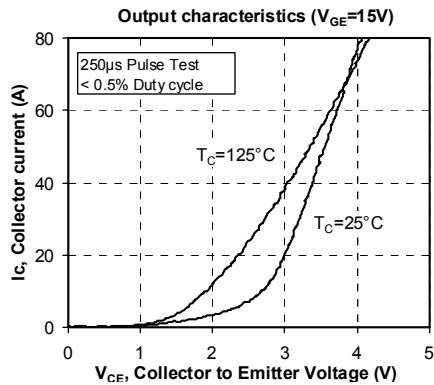
Thermal and package characteristics

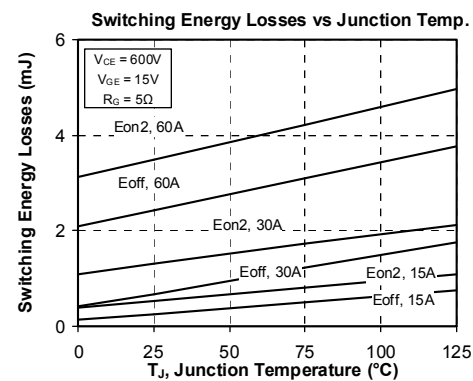
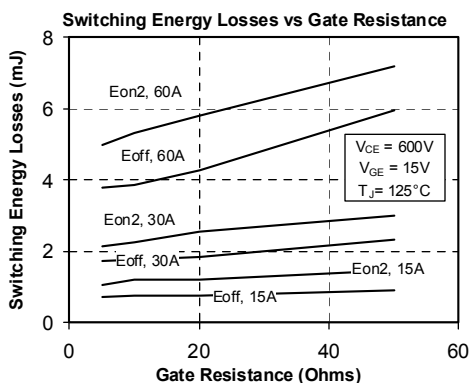
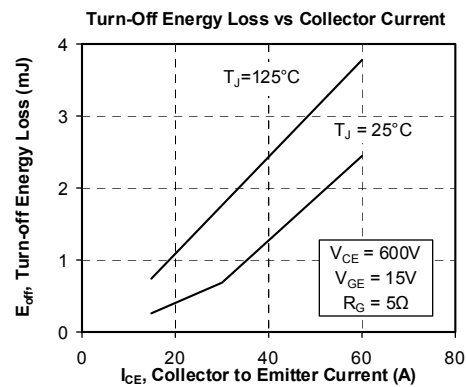
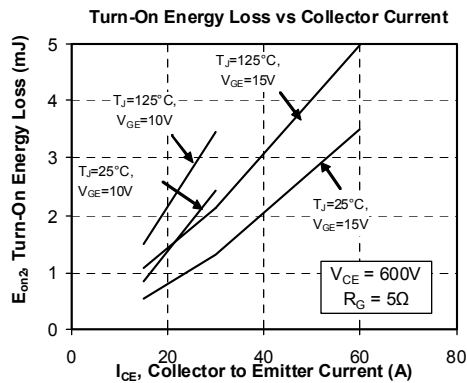
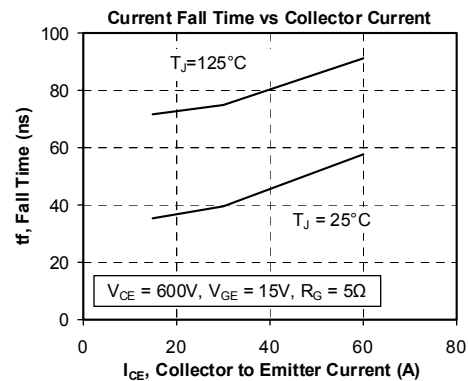
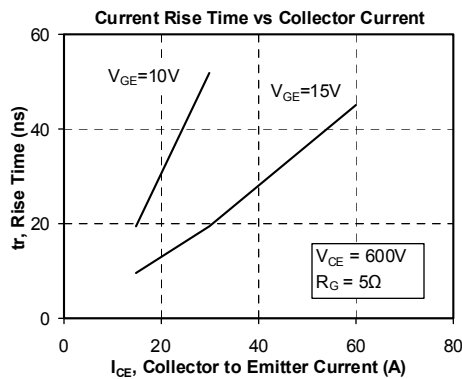
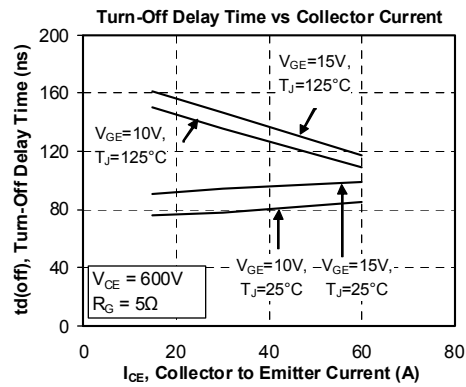
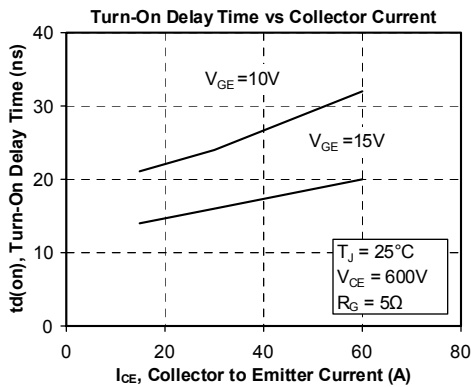
Symbol	Characteristic			Min	Typ	Max	Unit
R_{thJC}	Junction to Case	IGBT				0.6	$^\circ C/W$
		Diode				0.9	
V_{ISOL}	RMS Isolation Voltage, any terminal to case $t = 1 \text{ min}$, $I_{isol} < 1mA$, 50/60Hz			2500			V
T_J	Operating junction temperature range			-40		150	$^\circ C$
T_{STG}	Storage Temperature Range			-40		125	
T_C	Operating Case Temperature			-40		100	
Torque	Mounting torque	To heatsink	M4			4.7	N.m
Wt	Package Weight					110	g

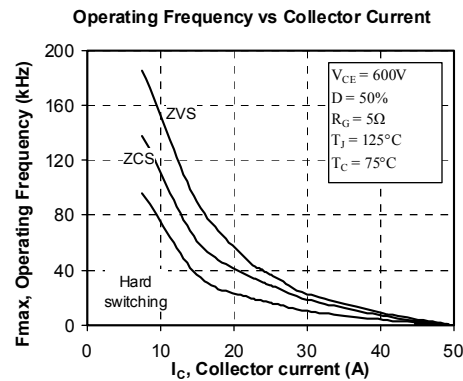
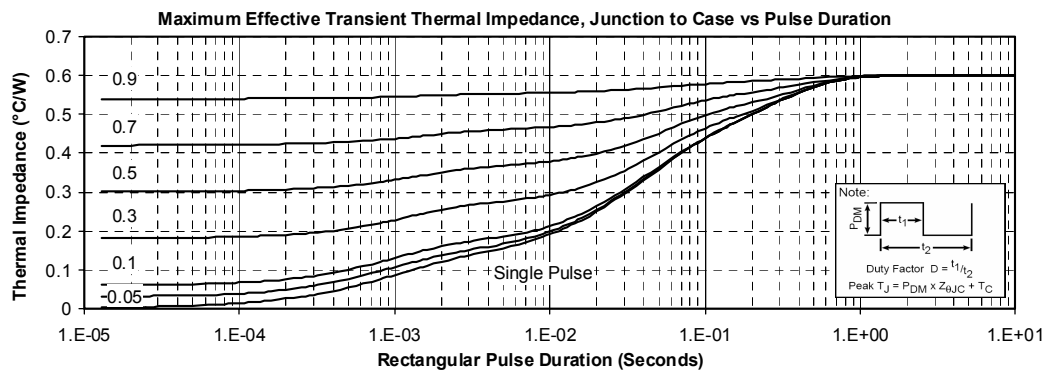
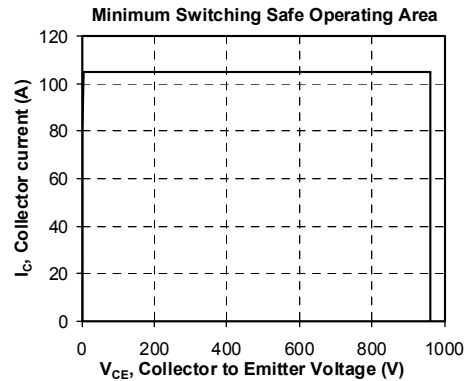
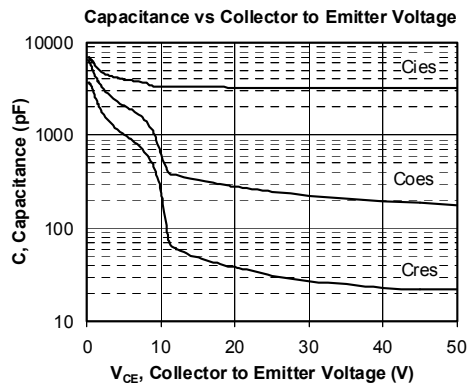
Package outline



Typical Performance Curve







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