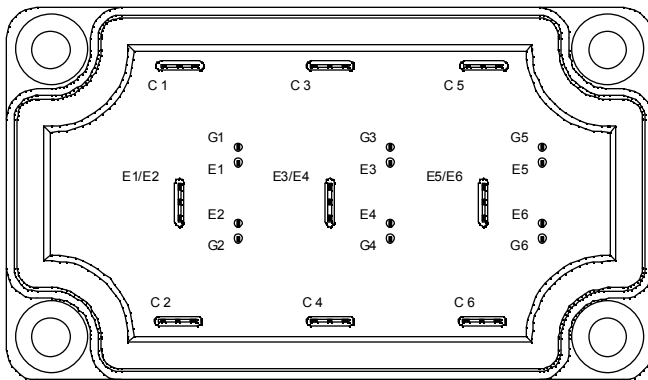
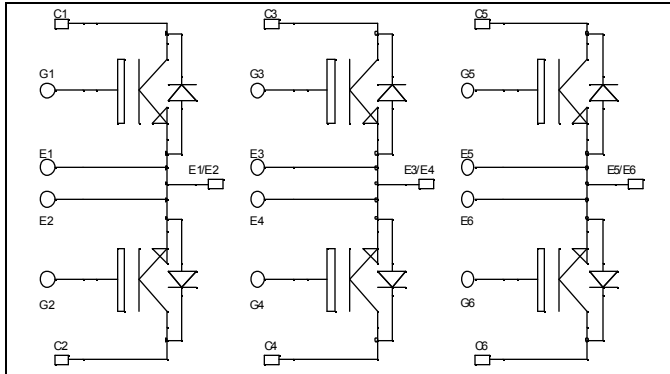


Triple Dual Common Source PT IGBT Power Module

$$V_{CES} = 1200V$$

$$I_C = 40A @ T_c = 80^{\circ}C$$



Application

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

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
 - 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
- Each leg can be easily paralleled to achieve a dual common source of three times 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	$T_c = 25^{\circ}C$	160
V_{GE}	Gate - Emitter Voltage	± 20	V
P_D	Maximum Power Dissipation	$T_c = 25^{\circ}C$	277
SSOA	Switching Safe Operating Area	$T_j = 150^{\circ}C$	170A @ 960V

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	$V_{GE} = 0V, I_C = 500\mu A$	1200			V
I_{CES}	Zero Gate Voltage Collector Current	$V_{GE} = 0V$ $V_{CE} = 1200V$	$T_j = 25^\circ\text{C}$ $T_j = 125^\circ\text{C}$		500 2500	μA
$V_{CE(on)}$	Collector Emitter on Voltage	$V_{GE} = 15V$ $I_C = 40A$	$T_j = 25^\circ\text{C}$ $T_j = 125^\circ\text{C}$	3.3 3.0	3.9	V
$V_{GE(th)}$	Gate Threshold Voltage	$V_{GE} = V_{CE}, I_C = 1mA$	3		6	V
I_{GES}	Gate - Emitter Leakage Current	$V_{GE} = \pm 20V, V_{CE} = 0V$			± 100	nA

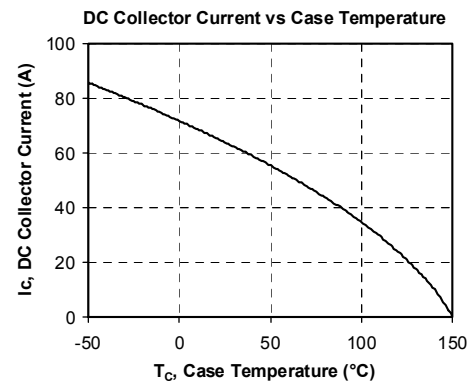
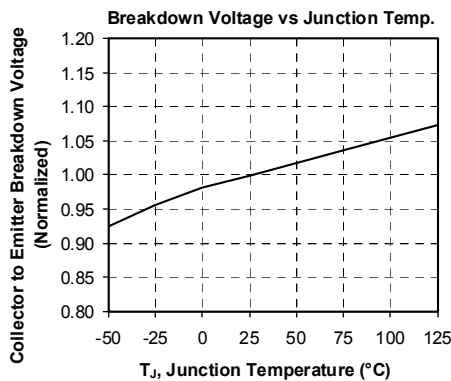
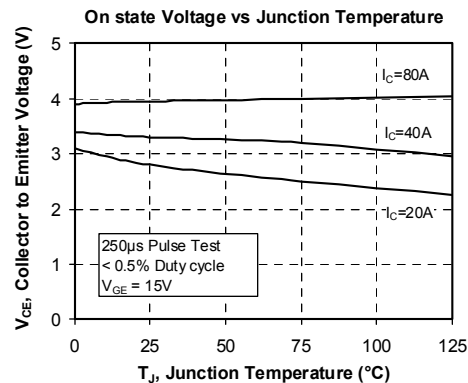
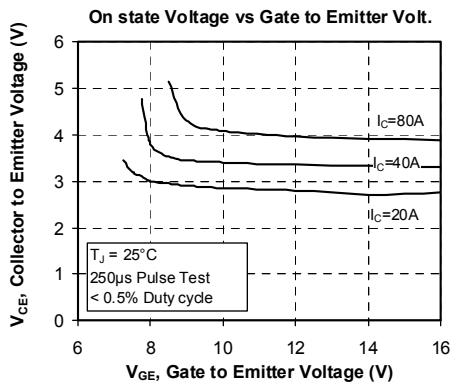
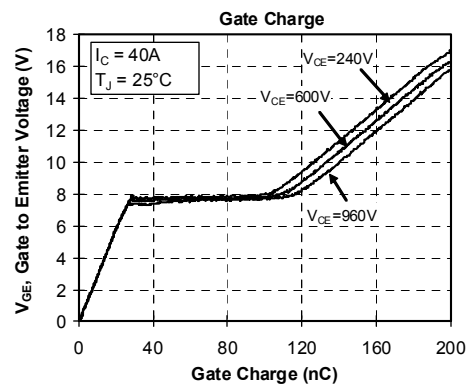
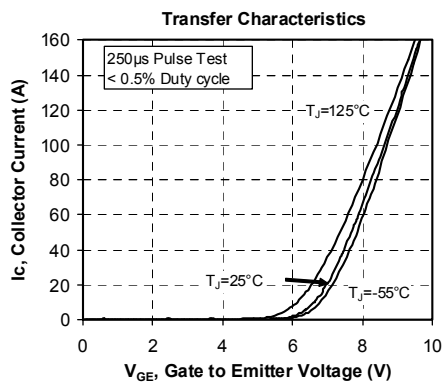
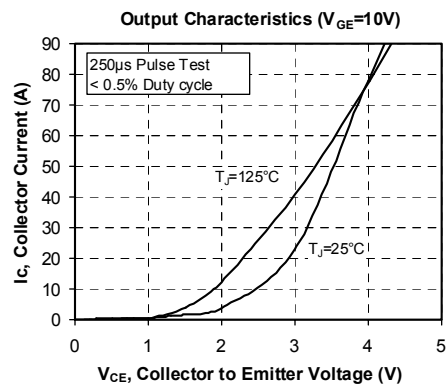
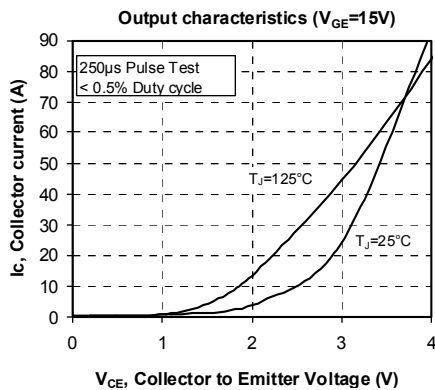
Dynamic Characteristics

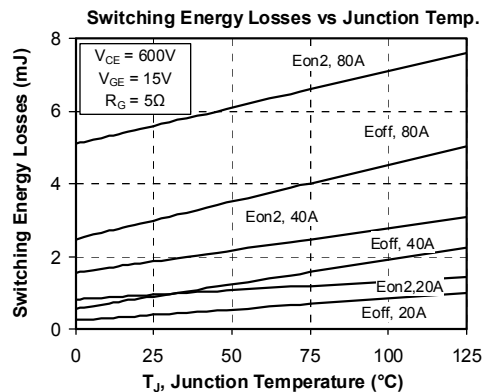
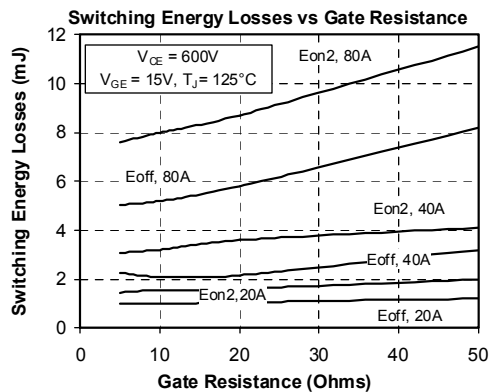
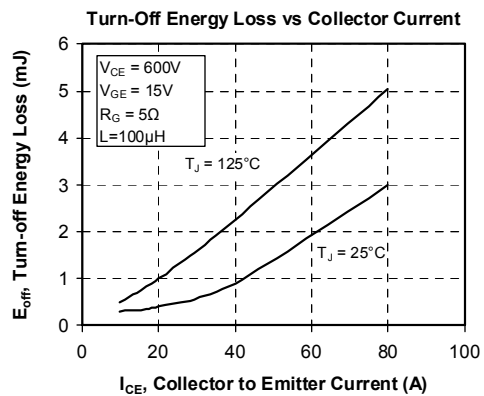
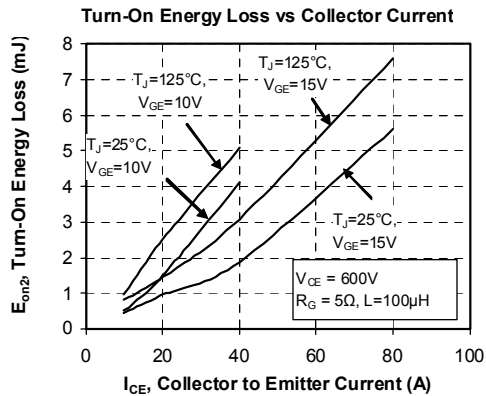
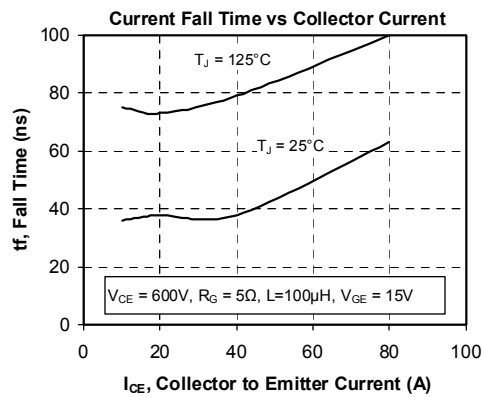
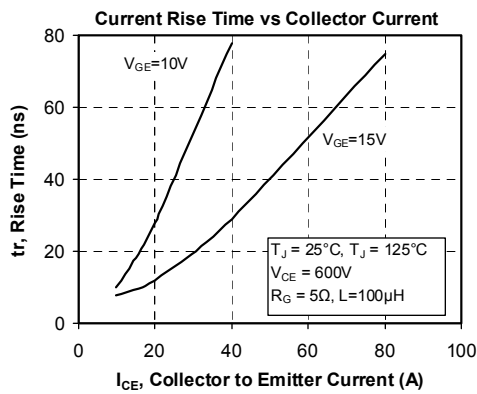
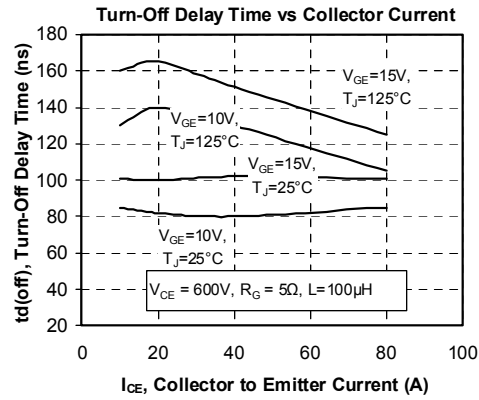
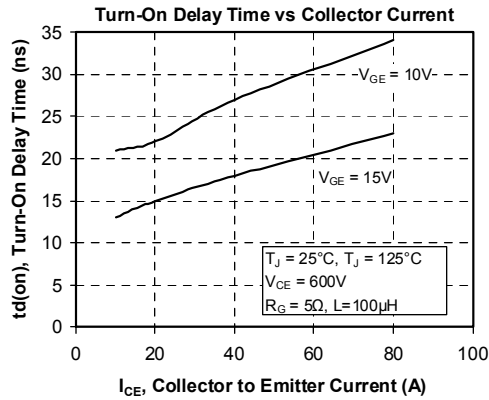
Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
C_{ies}	Input Capacitance	$V_{GE} = 0V$		3935		pF
C_{oes}	Output Capacitance	$V_{CE} = 25V$		300		
C_{res}	Reverse Transfer Capacitance	$f = 1MHz$		55		
Q_g	Total gate Charge	$V_{GE} = 15V$		185		nC
Q_{ge}	Gate - Emitter Charge	$V_{Bus} = 300V$		25		
Q_{gc}	Gate - Collector Charge	$I_C = 40A$		80		
$T_{d(on)}$	Turn-on Delay Time	Inductive Switching (25°C) $V_{GE} = 15V$ $V_{Bus} = 600V$ $I_C = 40A$ $R_G = 5\Omega$		18		ns
T_r	Rise Time			29		
$T_{d(off)}$	Turn-off Delay Time			102		
T_f	Fall Time			38		
E_{on1}	Turn-on Switching Energy			900		μJ
E_{on2}	Turn-on Switching Energy ❶			1869		
E_{off}	Turn-off Switching Energy ❷			904		
$T_{d(on)}$	Turn-on Delay Time	Inductive Switching (125°C) $V_{GE} = 15V$ $V_{Bus} = 600V$ $I_C = 40A$ $R_G = 5\Omega$		18		ns
T_r	Rise Time			29		
$T_{d(off)}$	Turn-off Delay Time			151		
T_f	Fall Time			79		
E_{on1}	Turn-on Switching Energy			900		μJ
E_{on2}	Turn-on Switching Energy ❶			3078		
E_{off}	Turn-off Switching Energy ❷			2254		

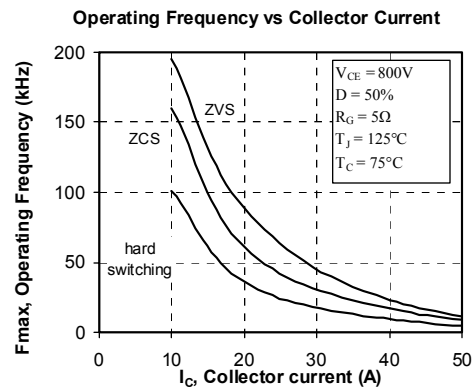
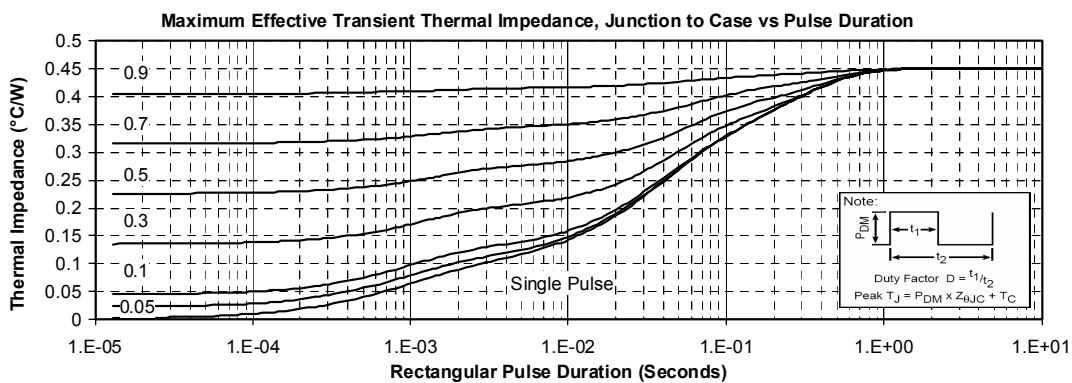
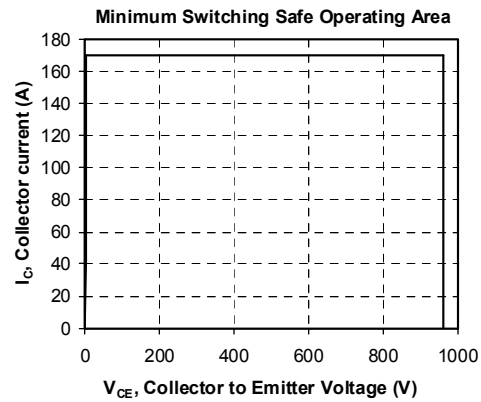
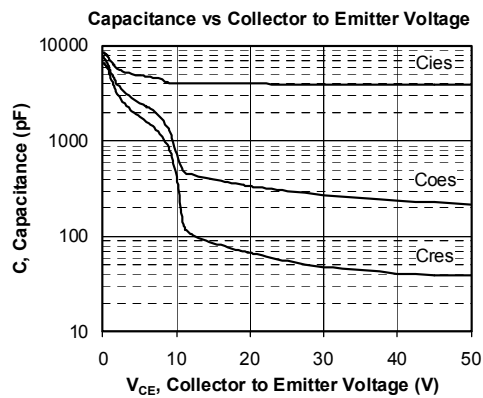
❶ E_{on2} includes diode reverse recovery

❷ In accordance with JEDEC standard JESD24-1

Typical Performance Curve







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APT's products are covered by one or more of U.S. patents 4,895,810 5,045,903 5,089,434 5,182,234 5,019,522 5,262,336 6,503,786 5,256,583 4,748,103 5,283,202 5,231,474 5,434,095 5,528,058 and foreign patents. U.S. and Foreign patents pending. All Rights Reserved.