

Rev.A Mar

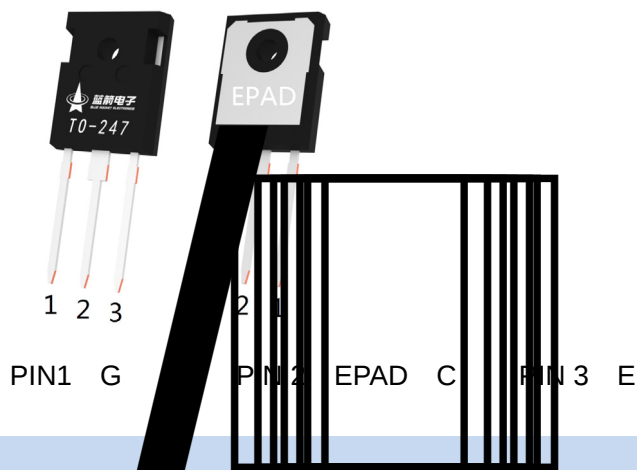
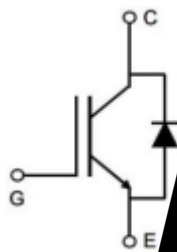
TO-247

Insulated Gate Bipolar Transistor in a TO-247 Plastic Package.

650V 10A

$V_{CE(SAT)} = 1.0V (I_{CP} = 5A, V_{CE} = 15V, t_C = 100\mu s)$

Solar Converters, Uninterrupted Power Supply, Welding Converters, Mid to High Range Switching Frequency Converters.



See Marking Instructions.

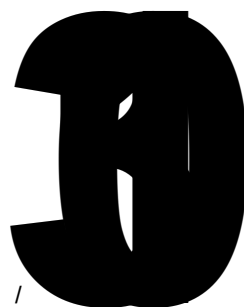


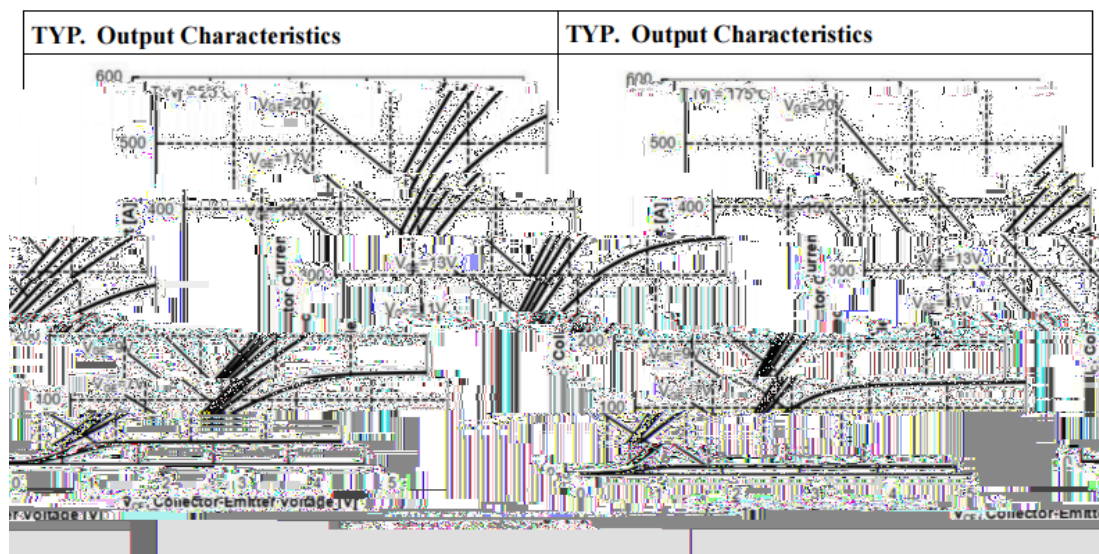
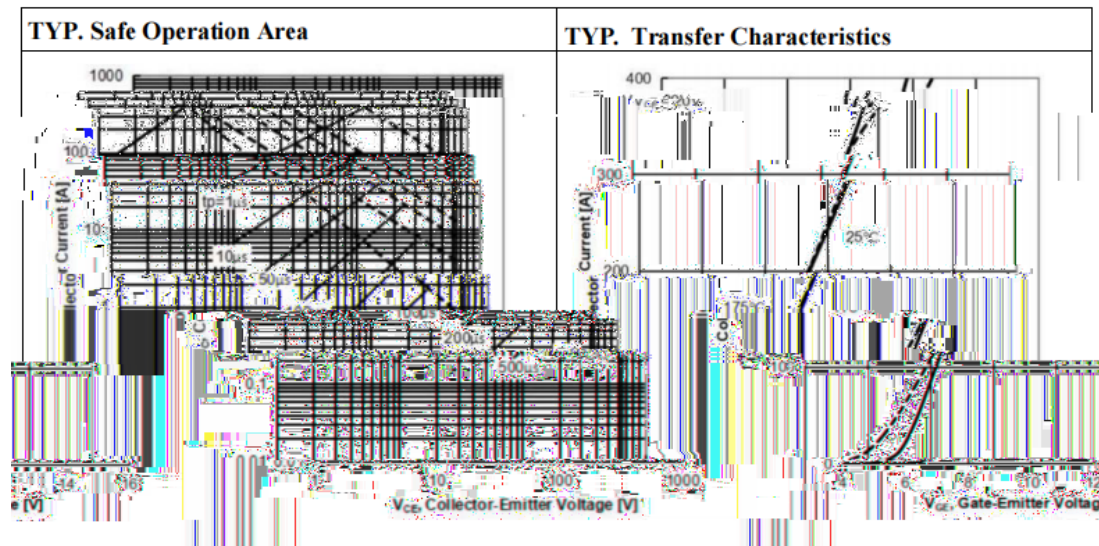
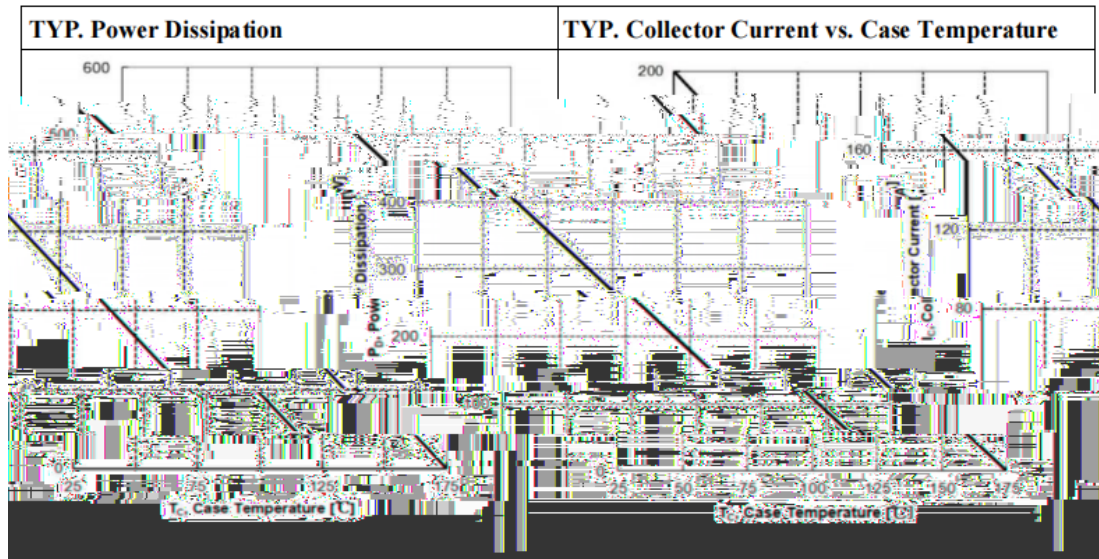
Parameter		Symbol	Rating	Unit
Collector-Emitter Voltage		V_{CES}	650	V
Gate-Emitter Voltage		V_{GES}	± 30	V
Continuous Collector Current	$T_C=25$	I_C	200	A
	$T_C=100$		100	A
Pulsed Collector Current , Limited by T_{Jmax}		I_{CM}	400	A
Continuous Diode Forward Current	$T_C=25$	I_F	150	A
	$T_C=100$		75	A
Power Dissipation	$T_C=25$	P_D	536	W
Operating Junction Temperature Range		T_J	-40 to +175	
Storage Temperature Range			-55 to +175	
Maximum Temperature of soldering			260	
Maximum Junction to Ambient			40	/W
Maximum IGBT Junction-to-Case			0.26	/W
Maximum Diode Junction-to-Case			1.26	/W

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Emitter Breakdown Voltage	BV_{CES}	$I_C=1.0mA$, $V_{GE}=0V$	650			V
Zero Gate Voltage Collector current	I_{CES}	$V_{CE}=650V$, $V_{GE}=0V$			10	μA
Gate-Emitter Leakage Current	I_{GES}	$V_{CE}=0V$, $V_{GE}=\pm 20V$			± 200	nA
Gate-Emitter Threshold Voltage	$V_{GE(th)}$	$V_{CE}=V_{GE}$, $I_C=1.0mA$	4.3	5.3	6.3	V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$V_{GE}=15V$, $I_C=100A$, $T_J=25$		1.60	1.95	V
		$T_J=125$		1.87		
		$T_J=175$		2.04		
Total Gate Charge	Q_g	$V_{GE}=15V$, $V_{CC}=520V$, $I_C=100A$		405		nC
Gate to Emitter Charge	Q_{ge}			72		
Gate to Collector Charge	Q_{gc}			189		

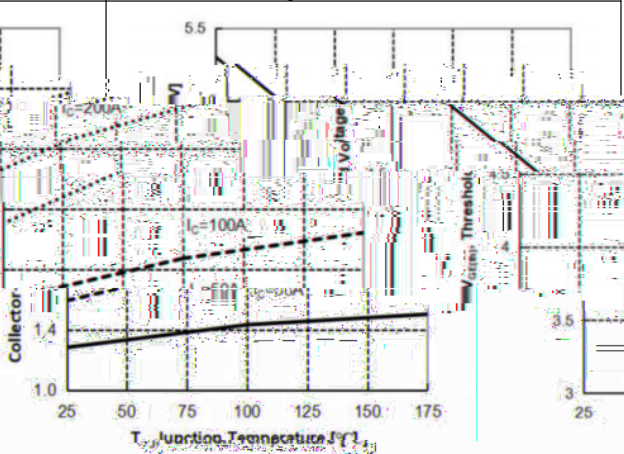
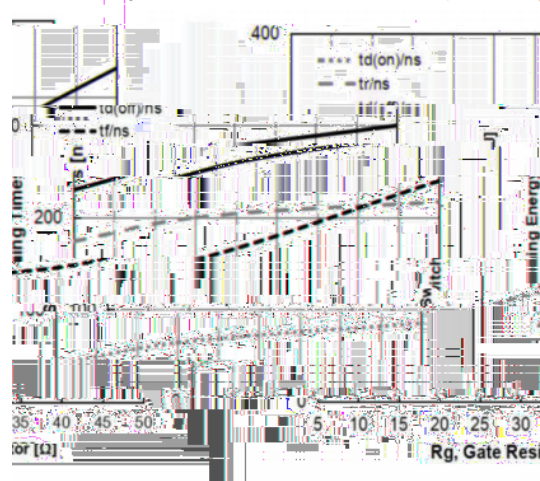
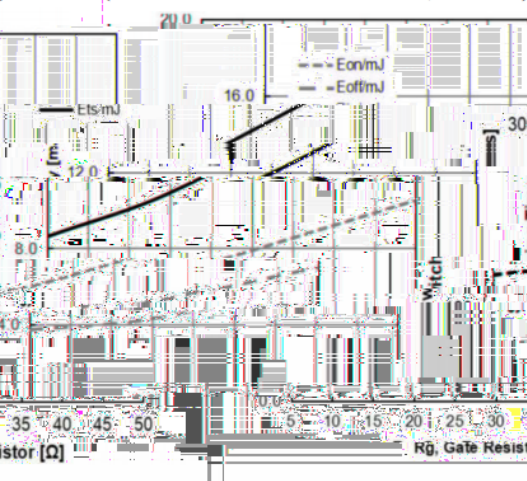
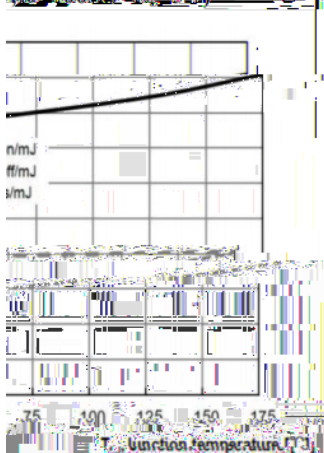
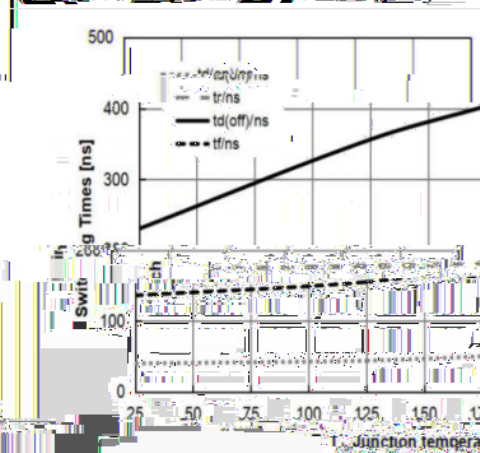
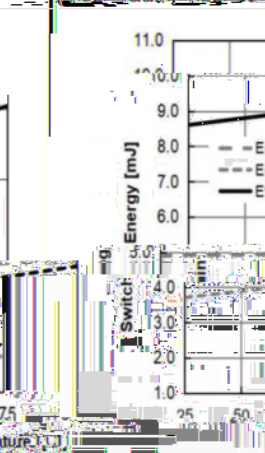


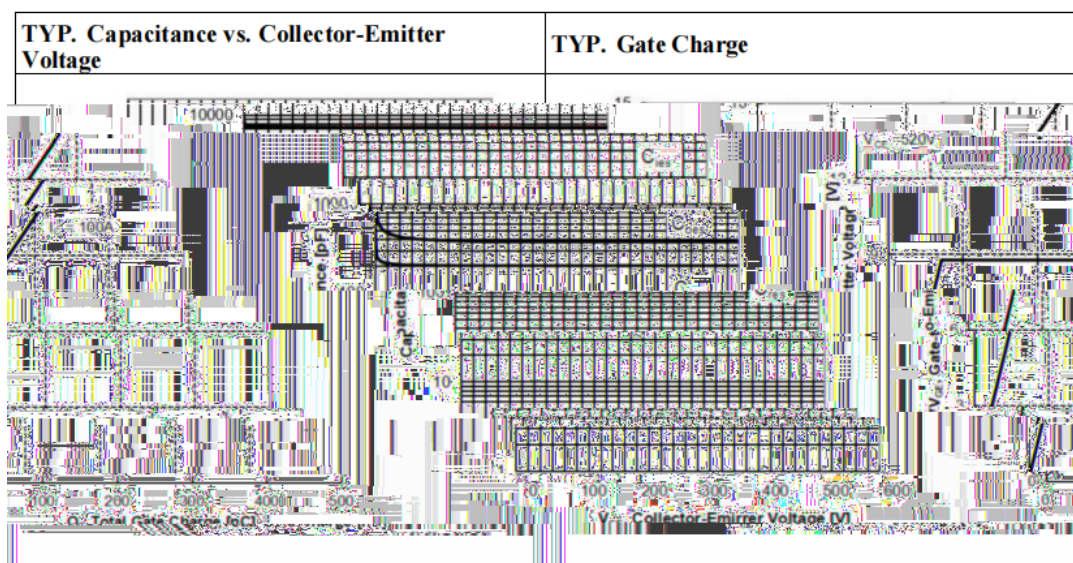
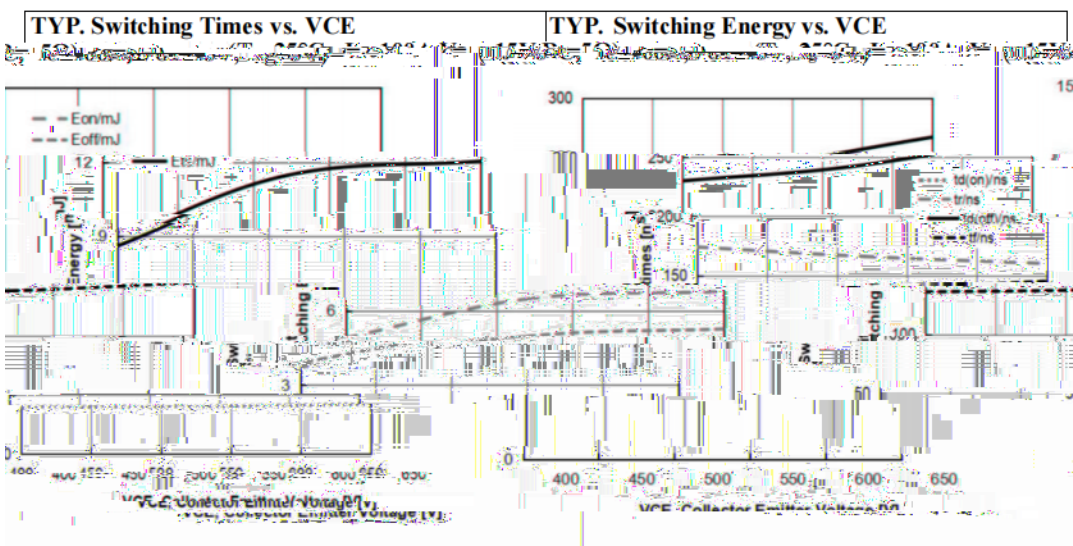
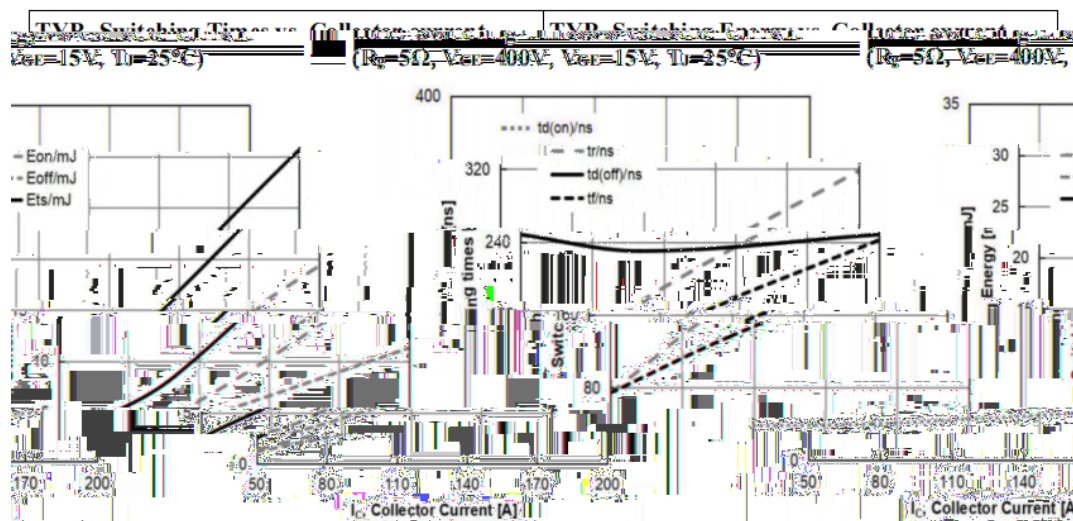
Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit
Turn-On Delay Time	$t_{d(on)}$	$V_{GE}=15V$, $V_{CC}=400V$ $I_C=100A$, $R_G=5\Omega$ Inductive Load	$T_J=25$		40		ns
			$T_J=175$		50		ns
Turn-On Rise Time	t_r		$T_J=25$		174		ns
			$T_J=175$		183		ns
Turn-Off Delay Time	$t_{d(off)}$		$T_J=25$		230		ns
			$T_J=175$		403		ns
Turn-Off Fall Time	t_f		$T_J=25$		136		ns
			$T_J=175$		177		ns
Turn-On Energy	E_{on}		$T_J=25$		4.89		mJ
			$T_J=175$		5.06		mJ
Turn-Off Energy	E_{off}		$T_J=25$		3.71		mJ
			$T_J=175$		5.01		mJ
Total Switching Energy	E_{ts}		$T_J=25$		8.6		mJ
			$T_J=175$		10.07		mJ
Input Capacitance	C_{ies}	$V_{GE}=0V$, $f=1MHz$	$V_{CE}=25V$		7220		pF
Output Capacitance	C_{oes}				369		pF
Reverse Transfer Capacitance	C_{res}				198		pF
Short Circuit Safe Operation Area	SCSOA	$V_{GE}=15V$, $V_{CC} \leq 400V$, $T_{J,start} \leq 25$		5			μs
Diode Forward Voltage	V_F	$I_F=40A$	$T_J=25$		1.35		V
Diode Reverse Recovery Time	T_{rr}	$V_R=400V$, $I_F=75A$ $dI_F/dt=200$ $A/\mu s$ $T_C=25$	$T_J=25$		136		ns
			$T_J=175$		183		
Diode Reverse Recovery Charge	Q_{rr}		$T_J=25$		430		μC
			$T_J=175$		670		
Diode Peak Reverse Recovery Current	I_{rm}		$T_J=25$		6.3		A
			$T_J=175$		8.5		



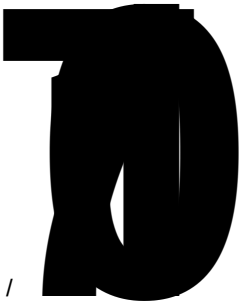
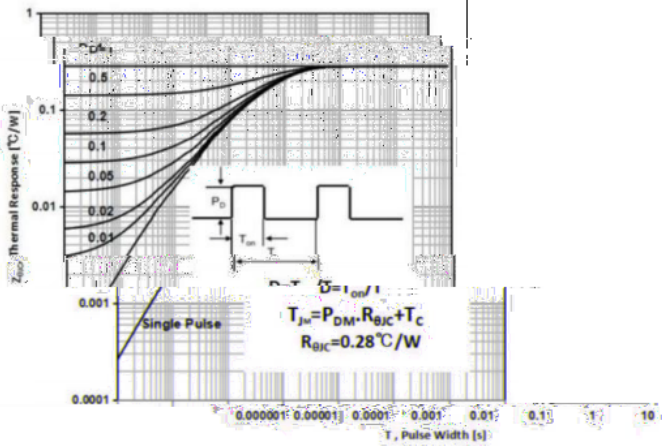


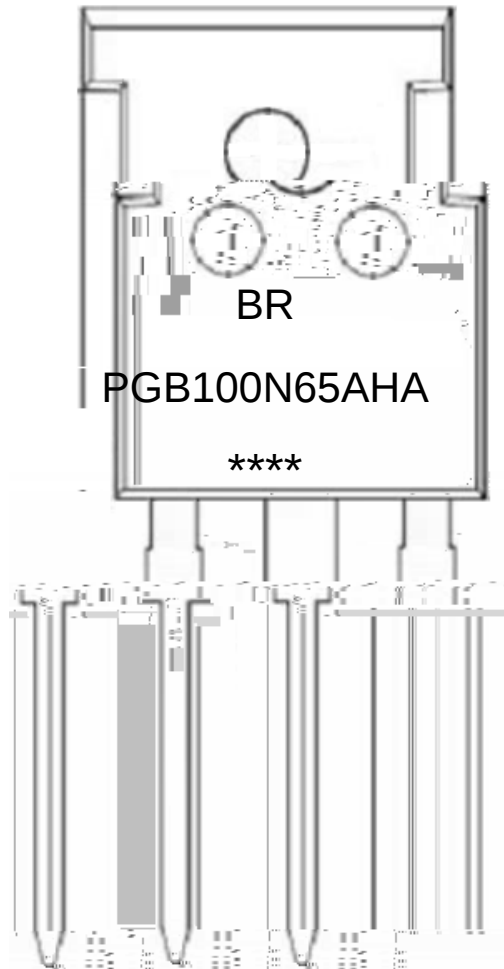

TYP. Typical Collector-Emitter Saturation Voltage vs. Junction Temperature

TYP. Gate-Emitter Threshold Voltage vs. Junction Temperature

TYP. Switching Times vs. Gate Resistor
 ($T_J = 25^\circ C$, $V_{CE} = 400V$, $V_{GE} = 15V$, $I_C = 100A$)

TYP. Switching Energy vs. Gate Resistor
 ($T_J = 25^\circ C$, $V_{CE} = 400V$, $V_{GE} = 15V$, $I_C = 100A$)

TYP. Switching Times vs. Junction Temperature
 ($V_{CE} = 400V$, $V_{GE} = 15V$, $I_C = 100A$, $R_G = 5\Omega$)

TYP. Switching Energy vs. Junction Temperature
 ($V_{CE} = 400V$, $V_{GE} = 15V$, $I_C = 100A$, $R_G = 5\Omega$)

TYP. Switching Times vs. Junction Temperature
 ($V_{CE} = 400V$, $V_{GE} = 15V$, $I_C = 100A$, $R_G = 5\Omega$)




TYP. IGBT Transient Thermal Impedance vs. Pulse Width





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Note:

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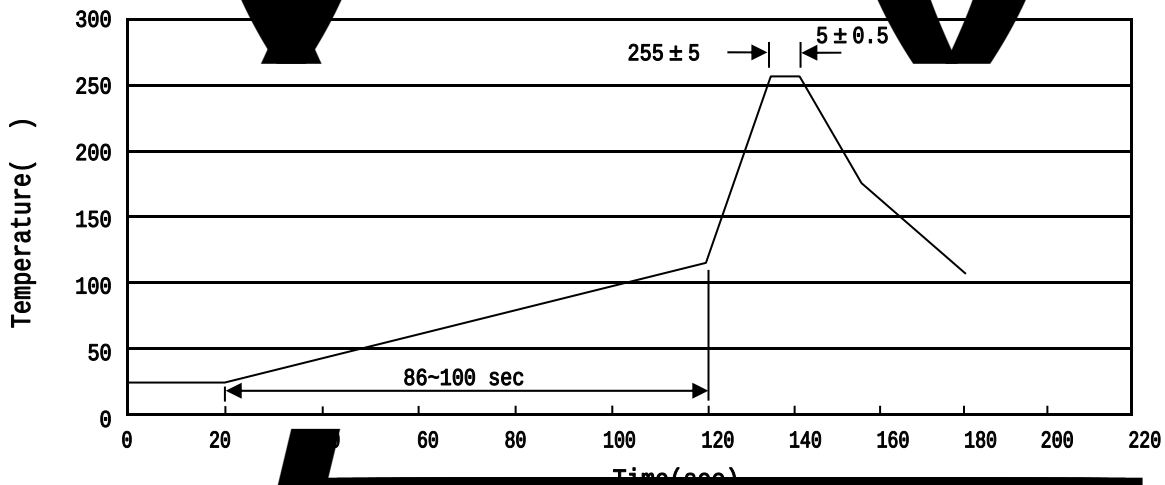
PGB100N65AHA:

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Company Code

Product Type Code

Lot No. Code, code change with Lot No.



- 1 25-150 60-90 sec; 1 Preheating: 25-150 °C, Time: 60-90 sec.
- 2 255 ± 5 5 ± 0.5 sec; 2 Peak Temp: 255 ± 5 °C, Duration: 5 ± 0.5 sec.
- 3 110 2-10 /sec. 3 Cooling Speed: 2-10 °C/sec.

270 ± 5 10 ± 1 sec Temp.: 270 ± 5 Time: 10 ± 1 sec

/ 7 ± 1 sec

Package Type	Units					Dimension (unit: mm ³)		
	Units/Tube	Units/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Tube	Inner Box	Outer Box
TO-247	20	15	450	5	2250	520×44×6	580×158×55	595×300×178

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