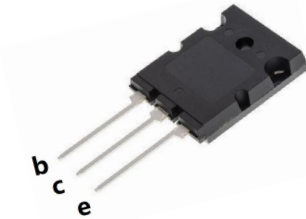


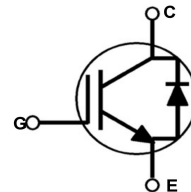
Features

- Low Gate charge
- $V_{CE(sat)} = 4.00V @ I_C = 50A$
- High Input Impedance
- Short circuit withstand time 10 μs



Applications

- PFC
- UPS
- Inverter



Absolute Maximum Ratings

Parameter		Symbol	Value	Unit
Collector-Emitter voltage		V_{CES}	1700	V
Gate-emitter voltage		V_{GES}	± 30	
Collector current	$T_C = 25^\circ C$	I_C	140	A
	$T_C = 100^\circ C$		70	
Pulsed collector current, pulse time limited by T_{jmax}		I_{CM}	210	
Diode forward current @ $T_C = 100^\circ C$		I_F	70	
Diode pulsed current, Pulse time limited by T_{jmax}		I_{FM}	420	
Power dissipation	$T_C = 25^\circ C$	P_D	625	W
	$T_C = 100^\circ C$		313	
Operating Junction and storage temperature rang		T_J	-55 to 175	$^\circ C$
		T_{stg}	-55 to 175	
Maximum Lead Temperature for Soldering Purposes		T_L	300	$^\circ C$

Electrical Characteristics ($T_C = 25^\circ C$ unless otherwise specified)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Collector-emitter breakdown voltage	BV_{CES}	$I_C = 500\mu A, V_{GE} = 0V$	1700	-	-	V
Gate-emitter threshold voltage	$V_{GE(th)}$	$V_{CE} = V_{GE}, I_C = 250\mu A$	4	-	6	
Zero gate voltage collector current	I_{CES}	$V_{CE} = 1700V, V_{GE} = 0V$	-		200	μA
Gate-emitter leakage current	I_{GES}	$V_{GE} = 20V, V_{CE} = 0V$	-	-	100	nA
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 50A, V_{GE} = 15V, T_C = 25^{\circ}C$	-	4.0	6.5	V
		$I_C = 50A, V_{GE} = 15V, T_C = 125^{\circ}C$	-	5.2	-	
Dynamic and Switching Characteristics						
Input capacitance	C_{ies}	$V_{CE}=25V,$	-	4670	-	pF

Output capacitance	C_{oes}	$V_{GE}=0V,$ $f=1.0MHz$	-	232	-	
Reverse transfer capacitance	C_{res}		-	100	-	
Total gate charge	Q_g	$V_{CE} = 850V, I_C = 70A,$ $V_{GE} = 15V$	-	160	-	nC
Gate to emitter Charge	Q_{ge}		-	26	-	
Gate to collector Charge	Q_{gc}		-	90	-	
Turn-on delay time	$t_{d(on)}$	$V_{GE} = 15V, V_{CC} = 850V,$ $I_C = 70A, R_G = 10\Omega,$ Inductive Load, $T_C = 25^\circ C$	-	100	-	ns
Rise time	t_r		-	80	-	
Turn-off delay time	$t_{d(off)}$		-	230	-	
Fall time	t_f		-	110	-	
Turn-on switching energy	E_{on}		-	2.4	-	mJ
Turn-off switching energy	E_{off}	$V_{GE} = 15V, V_{CC} = 850V,$ $I_C = 70A, R_G = 10\Omega,$ Inductive Load, $T_C = 125^\circ C$	-	1.5	-	
Total switching energy	E_{ts}		-	3.9	-	
Turn-on delay time	$t_{d(on)}$		-	96.2	-	ns
Rise time	t_r		-	77.6	-	
Turn-off delay time	$t_{d(off)}$		-	239	-	
Fall time	t_f		-	124.3	-	
Turn-on switching energy	E_{on}		-	3.6	-	mJ
Turn-off switching energy	E_{off}		-	4.5	-	
Total switching energy	E_{ts}		-	8.1	-	

Diode Characteristics ($T_C = 25^\circ C$ unless otherwise specified)

Forward voltage	V_F	$I_F=50A, T_C=25^\circ C$	-	1.1	1.5	V
		$I_F=50A, T_C=125^\circ C$	-	1.0	-	
Reverse recovery time	t_{rr}	$I_F=70A, di/dt=100A/\mu s$ $T_C=25^\circ C$	-	240	-	ns
Reverse recovery current	I_{rr}		-	45	-	A
Reverse recovery charge	Q_{rr}		-	1300	-	nC
Reverse recovery time	t_{rr}	$I_F=70A, di/dt=100A/\mu s$ $T_C=125^\circ C$	-	295	-	ns
Reverse recovery current	I_{rr}		-	35	-	A
Reverse recovery charge	Q_{rr}		-	2080	-	nC

Notes:

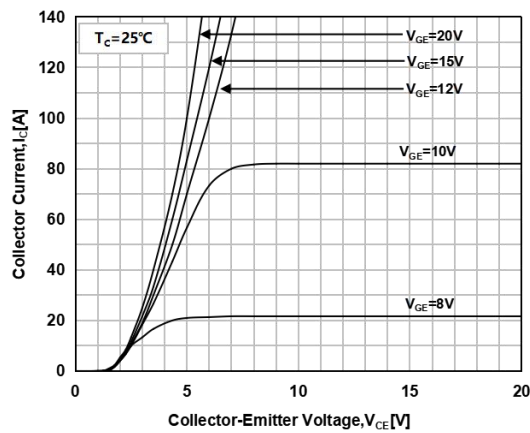
- 1: Pulse width limited by maximum junction temperature
- 2: Allowed number of short circuits: <1000; time between short circuits: >1s.
- 3: Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycles $\leq 2\%$
- 4: Essentially independent of operating temperature

Thermal Characteristics

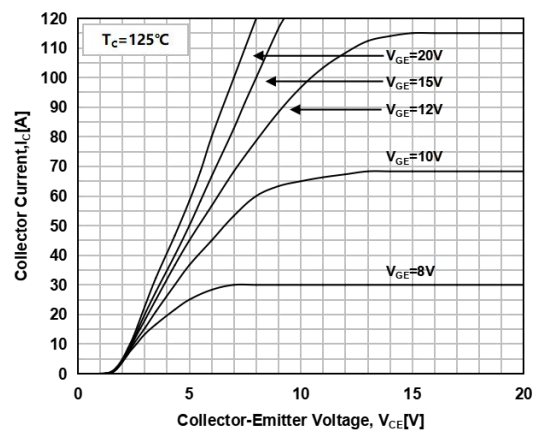
Parameter	Symbol	Value	Unit
Thermal resistance junction-to-ambient	$R_{\theta JA}$	62.5	$^\circ C/W$
Thermal resistance junction-to-case for IGBT	$R_{\theta JC}$	0.24	
Thermal resistance junction-to-case for Diode	$R_{\theta JC}$	0.36	

Typical Performance Characteristic

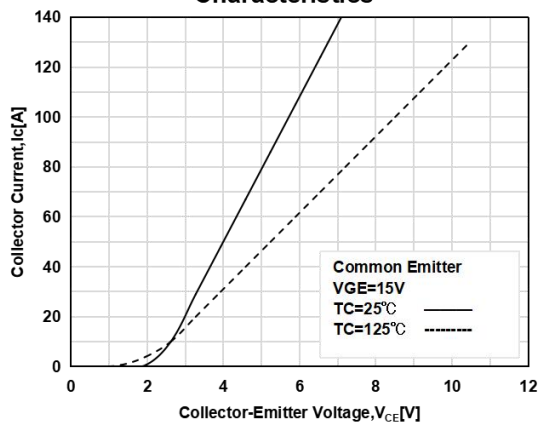
Typical Output Characteristics



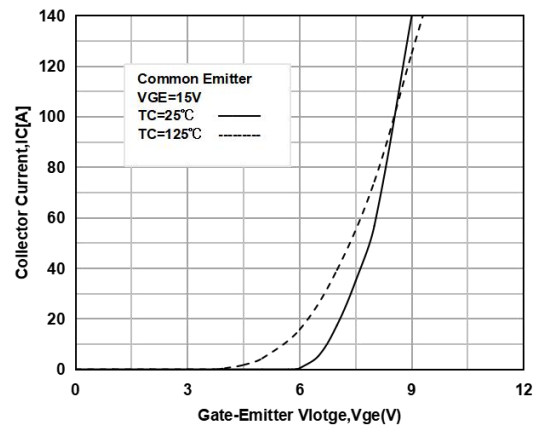
Typical Output Characteristics



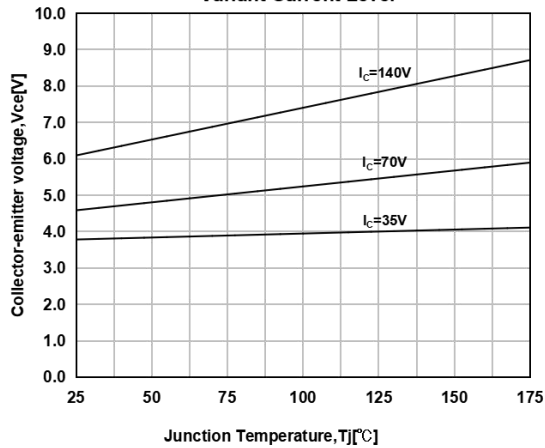
Typical Saturation Voltage Characteristics



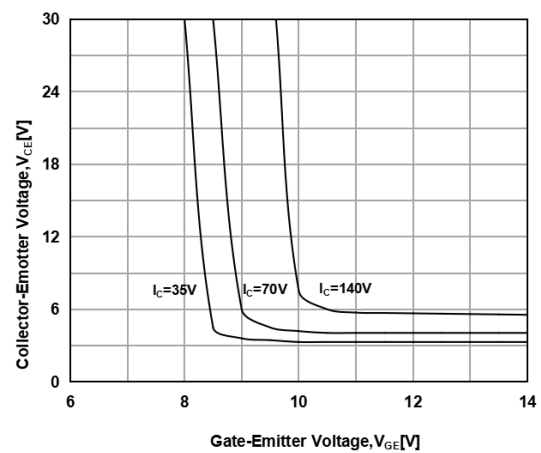
Transfer Characteristics

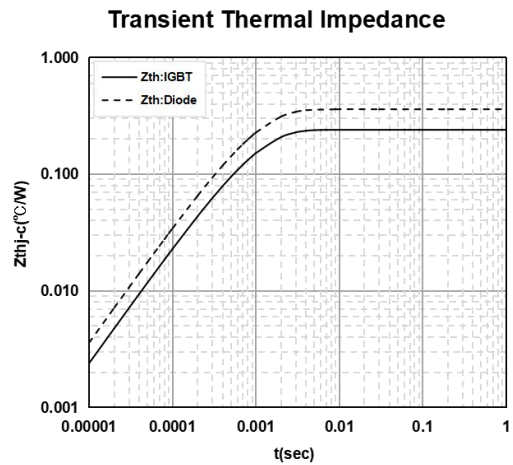
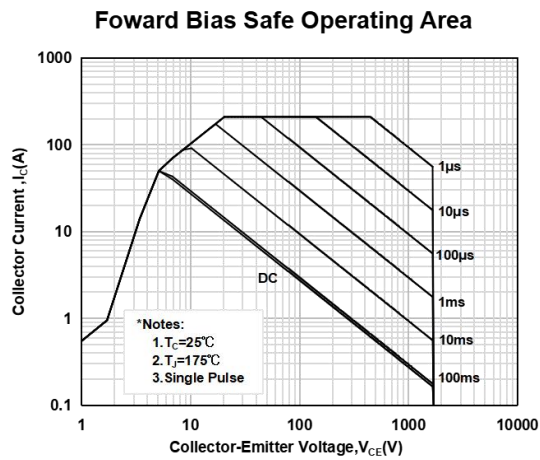
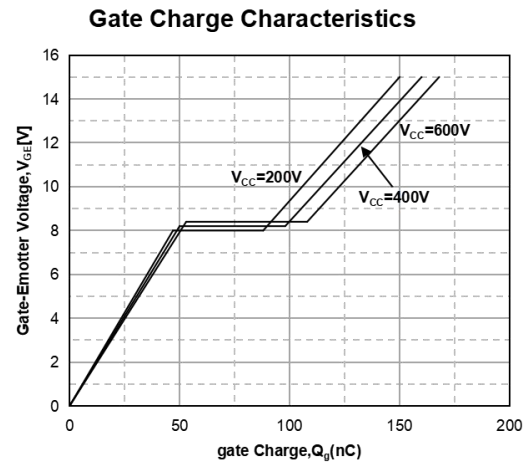
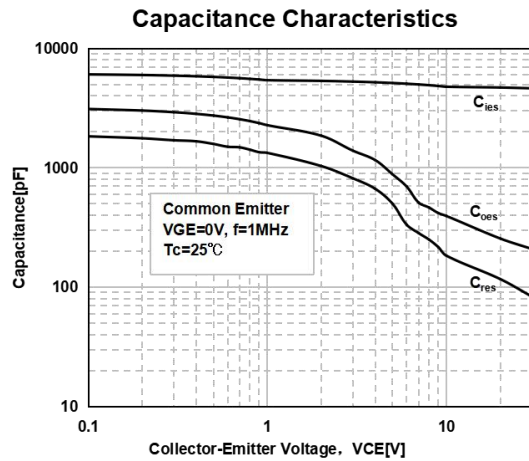
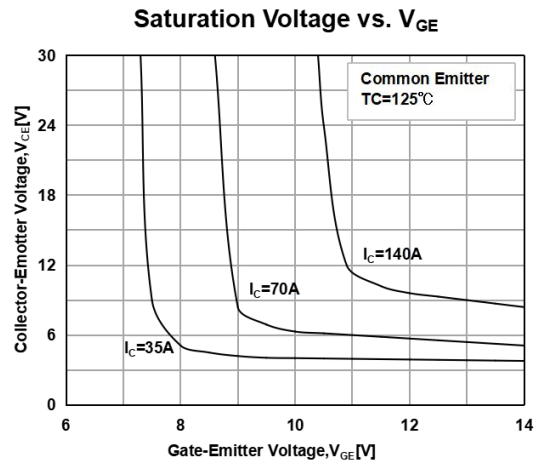
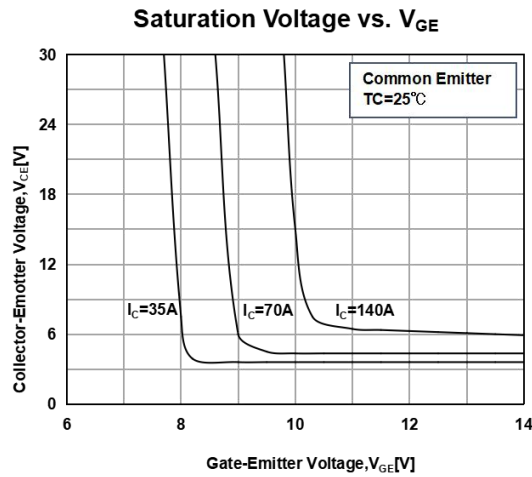


Saturation Voltage vs. Junction temperature at Variant Current Level

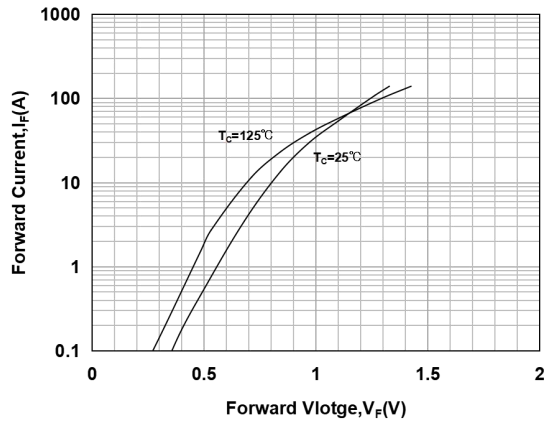


Saturation Voltage vs. V_{GE}

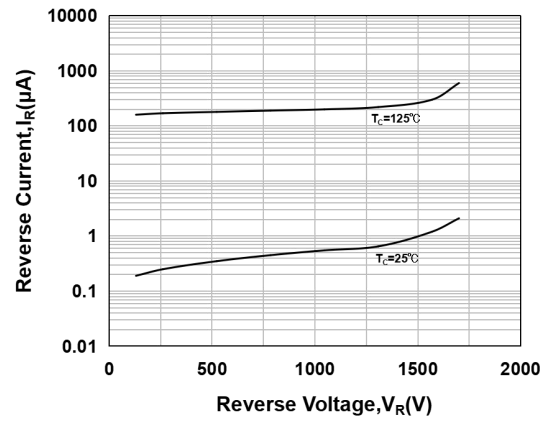




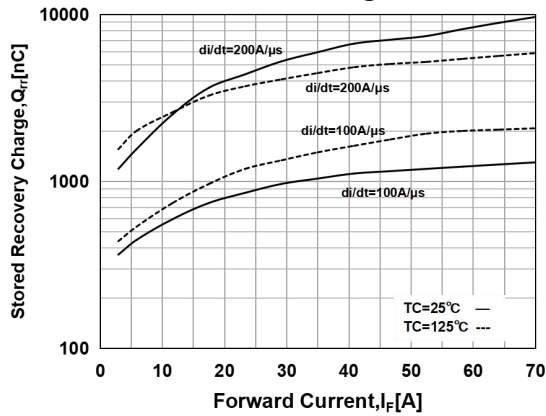
Forward Characteristics



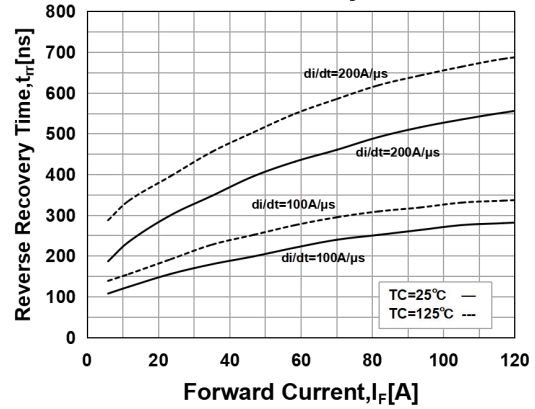
Reverse Current



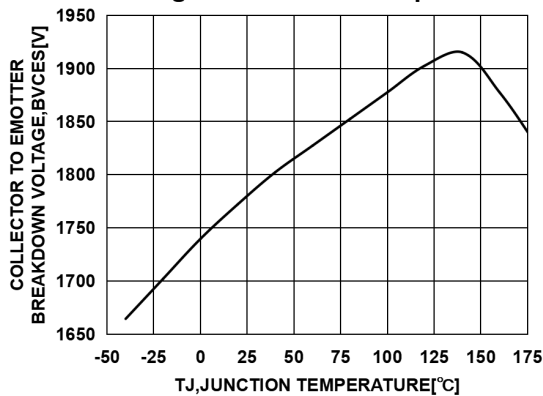
Stored Charge



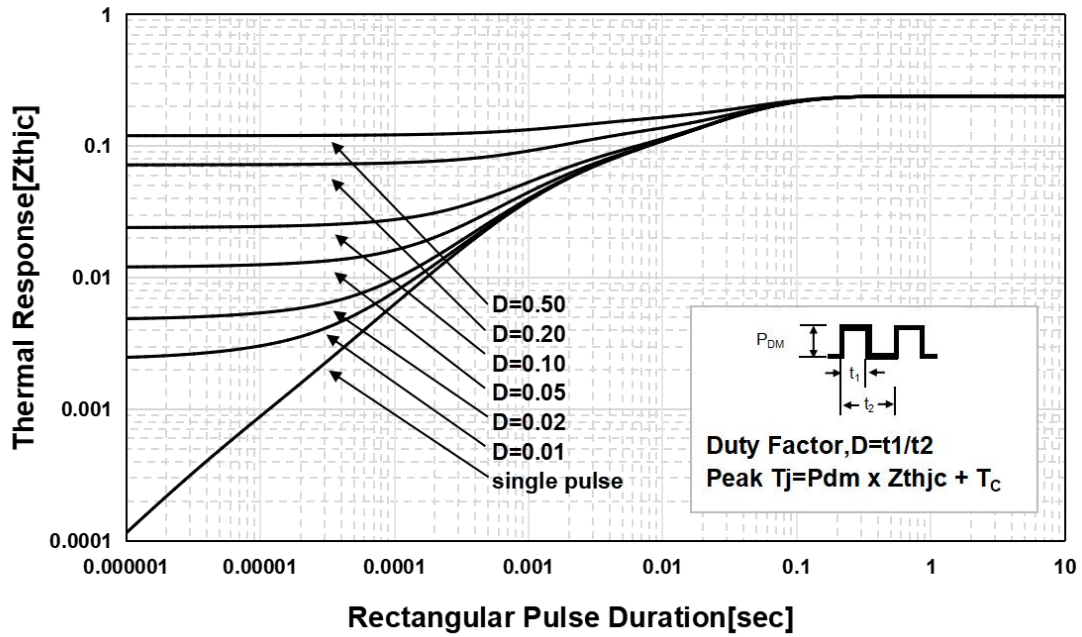
Reverse Recovery Time



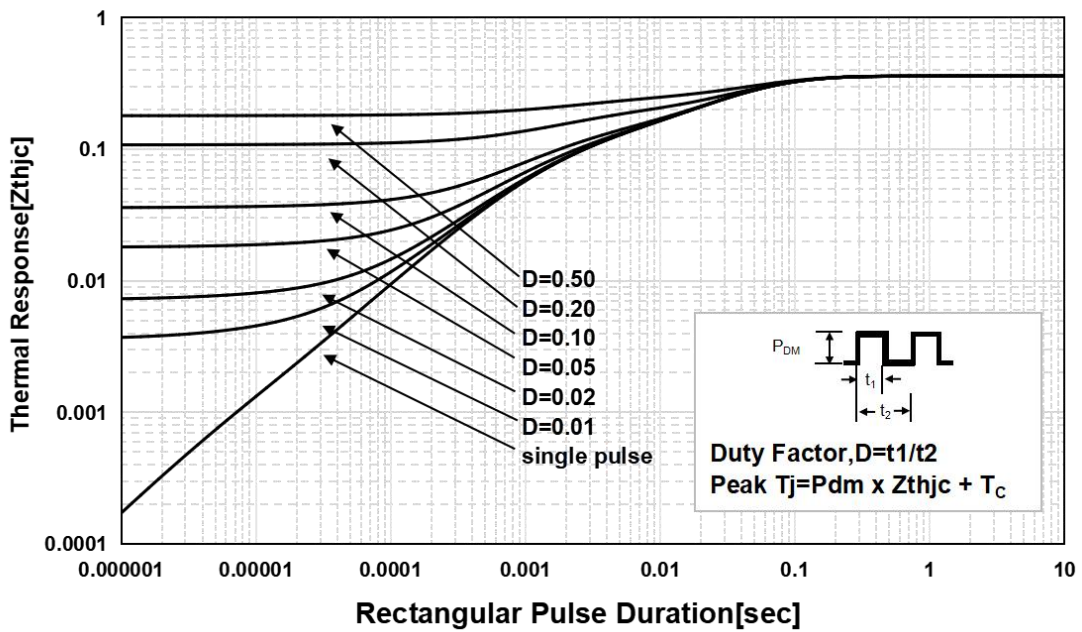
Collector to Emitter Breakdown Voltage vs. Junction Temperature



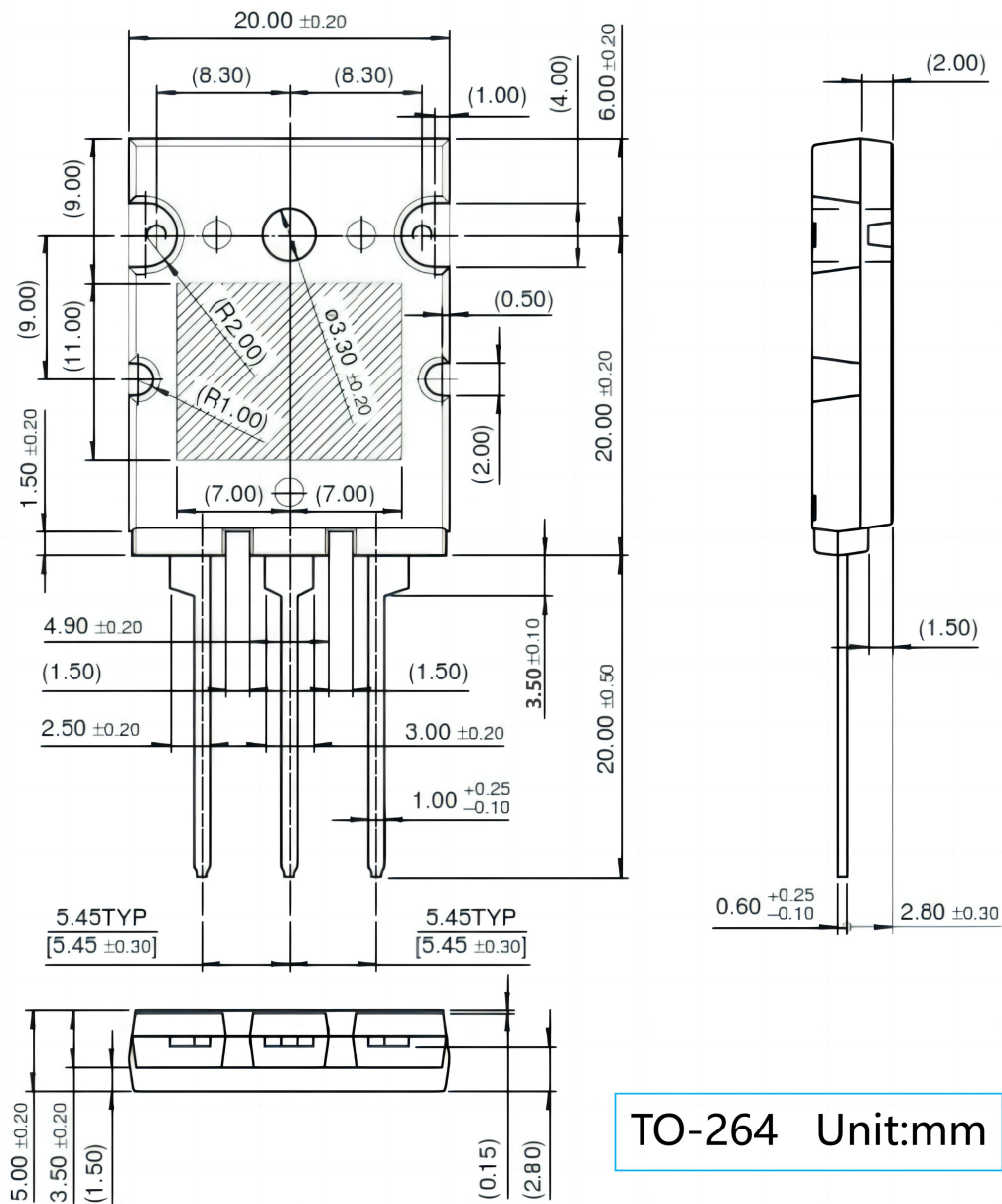
Transient Thermal Impedance of IGBT



Transient Thermal Impedance of Diode



Package outline dimension



TO-264 Unit:mm