

Rev.B May.-2026

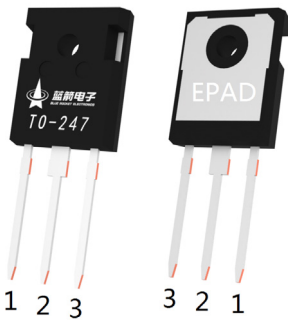
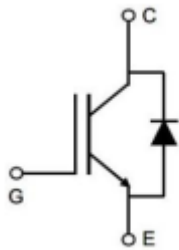
TO-247

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

$V_{CES} = 650V$ $I_C (T_C=100^\circ C) = 75A$

$V_{CE(SAT)} = 2.00V(\text{typ.}) @ V_{GE}=15V, I_C = 75A$

Motor driver, Uninterrupted Power Supply, Boost, Portable power station.



PIN1 G PIN 2 EPAD C PIN 3 E

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	150	A
	$T_C=100$		75	A
Pulsed Collector Current , Limited by T_{Jmax}		I_{CM}	300	A
Continuous Diode Forward Current	$T_C=25$	I_F	150	A
	$T_C=100$		75	A
Diode Repetitive Peak Forward Current		I_{FRM}	300	A
Short circuit withstand time		t_{sc}	8	μs
Power Dissipation	$T_C=25$	P_D	341	W
Maximum Temperature for Soldering		T_L	260	
Operating Junction Temperature Range		T_J	-40 to +175	
Storage Temperature Range		T_{STG}	-55 to +175	
Maximum Junction-to-Ambient		$R_{\theta JA}$	40	/W
Maximum IGBT Junction-to-Case		$R_{\theta JC}$	0.55	/W
Maximum Diode Junction-to-Case		$R_{\theta JC}$	1.44	/W

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Emitter Breakdown Voltage	BV_{CES}	$I_C=1mA, V_{GE}=0V$	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	$V_{GE(th)}$	$I_C=1.0mA, V_{GE}=0V$	4.3	5.3	6.3	V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$V_{GE}=15V, I_C=75A$	$T_J=25$	2.00	2.30	V
			$T_J=125$	2.23		
			$T_J=175$	2.37		
Total Gate Charge	Q_g	$V_{GE}=15V, V_{CC}=520V, I_C=75A$		167		nC
Gate to Emitter Charge	Q_{ge}			20		
Gate to Collector Charge	Q_{gc}			25		

Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit	
Turn-On Delay Time	$t_{d(on)}$	$V_{GE}=15V$, $V_{CC}=400V$ $I_C=75A$, $R_G=5\Omega$ Inductive Load	$T_J=25$		39		ns	
			$T_J=175$		42		ns	
Turn-On Rise Time	t_r		$T_J=25$		71		ns	
			$T_J=175$		75		ns	
Turn-Off Delay Time	$t_{d(off)}$		$T_J=25$		131		ns	
			$T_J=175$		162		ns	
Turn-Off Fall Time	t_f		$T_J=25$		44		ns	
			$T_J=175$		40		ns	
Turn-On Energy	E_{on}		$T_J=25$		2.63		mJ	
			$T_J=175$		2.83		mJ	
Turn-Off Energy	E_{off}		$T_J=25$		0.18		mJ	
			$T_J=175$		0.20		mJ	
Total Switching Energy	E_{ts}		$T_J=25$		2.81		mJ	
			$T_J=175$		3.03		mJ	
Input Capacitance	C_{ies}	$V_{GE}=0V$, $V_{CE}=25V$ $f=1MHz$			3360		pF	
Output Capacitance	C_{oes}				179		pF	
Reverse Transfer Capacitance	C_{res}				90		pF	
Diode Forward Voltage	V_F	$I_F=40A$	$T_J=25$		1.55	1.95	V	
			$T_J=125$		1.32			
			$T_J=175$		1.26			
Diode Reverse Recovery Time	T_{rr}	$VR=400V$, $I_F=40A$ $dI_F/dt=200$ A/us	$T_J=25$		90		ns	
			$T_J=175$		117			
Diode Reverse Recovery Charge	Q_{rr}		$T_J=25$		112		μC	
			$T_J=175$		163			
Diode Peak Reverse Recovery Current	I_{rm}		$T_J=25$		3.2		A	
			$T_J=175$		4.6			

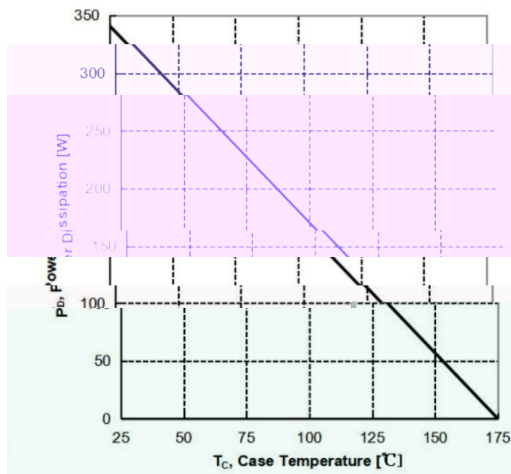


Fig. 1 Power Dissipation

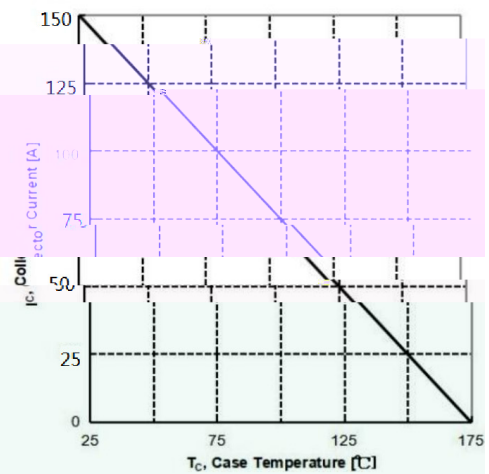
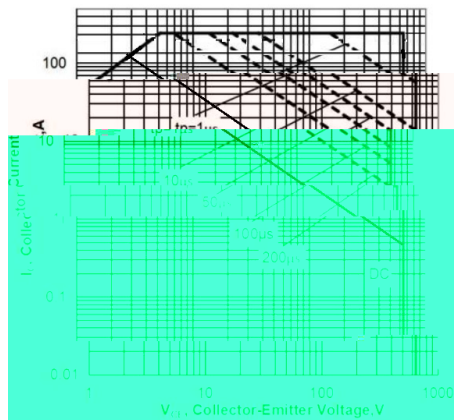

 Fig. 2 I_C vs. Case Temperature


Fig. 3 Forward Bias Safe Operating Area

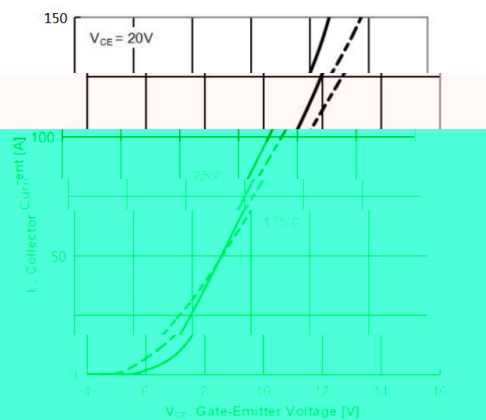
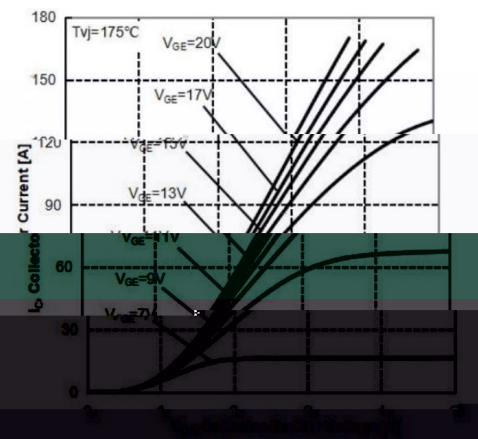
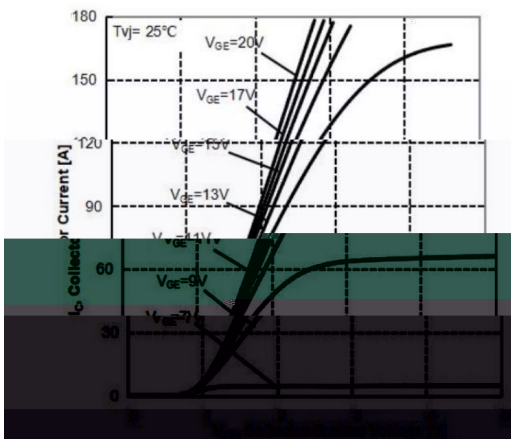

 Fig. 4 Power Dissipation as a function of V_{CE}

Fig. 3 Forward Bias Safe Operating Area (FBSOA)

 Fig. 4 Power Dissipation as a function of V_{CE}

$I_C = 150 A$, $T_C \leq 175^\circ C$, $V_{CE} \leq 15V$ Recommended max. temp. derating 100% (use at $V_{GE} \geq 7.5V$)



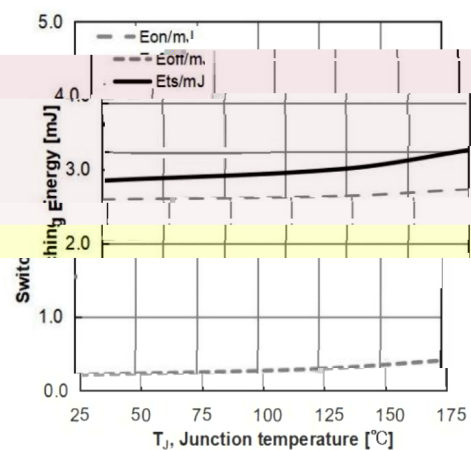
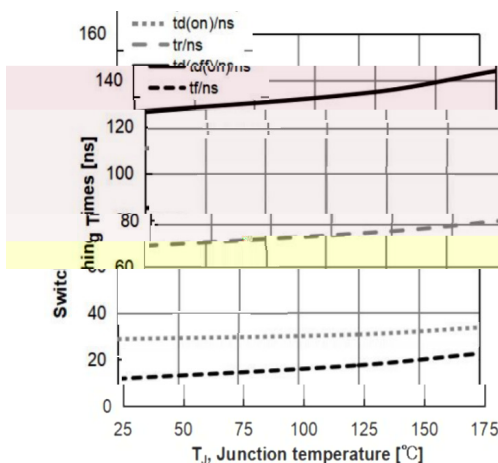
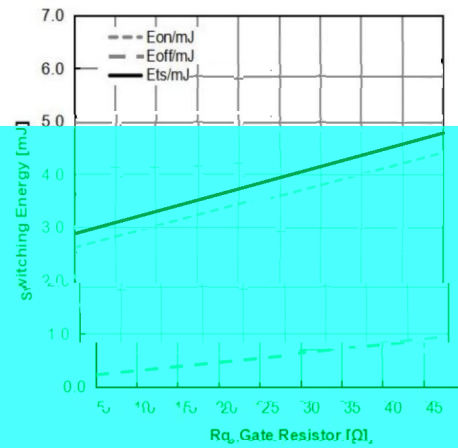
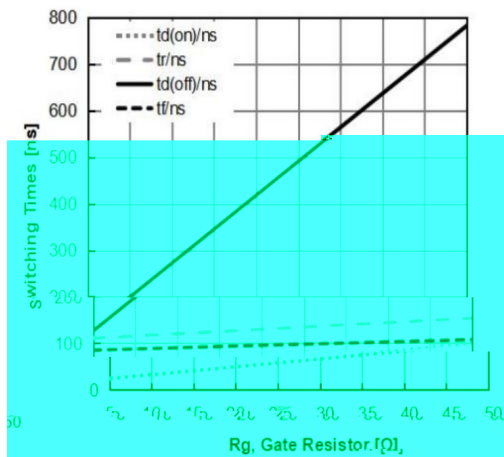
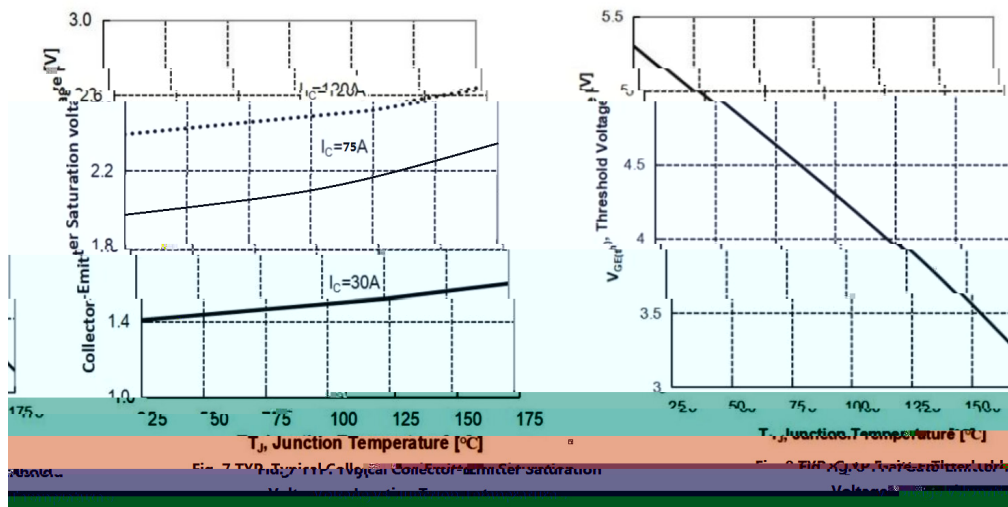
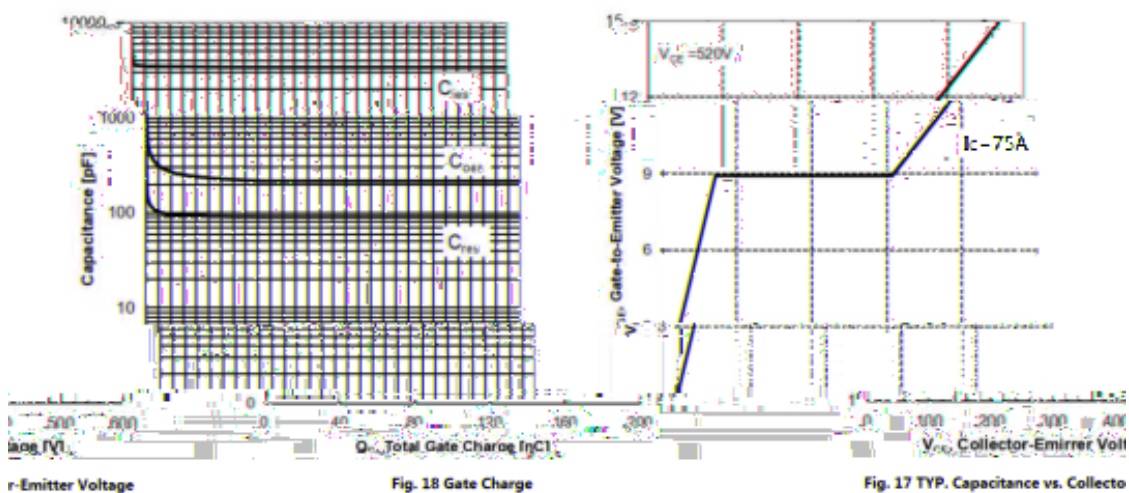
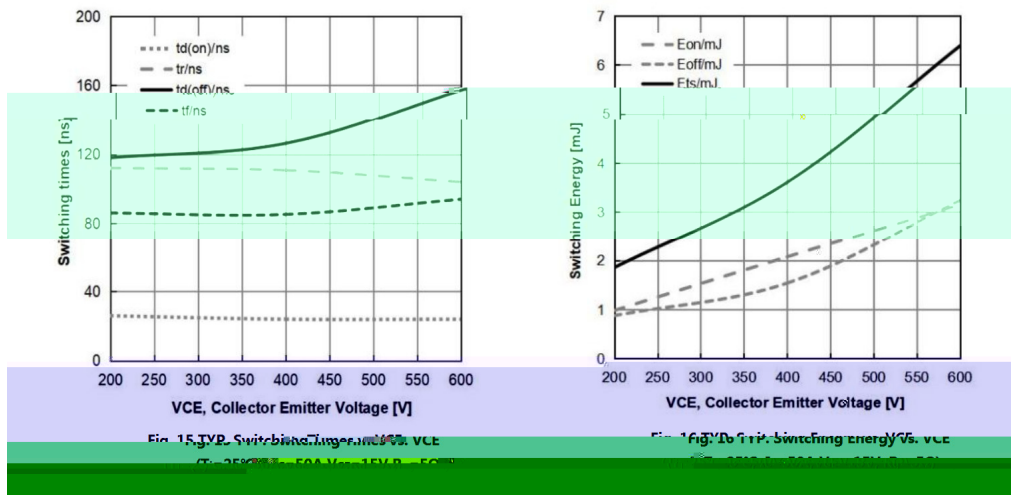
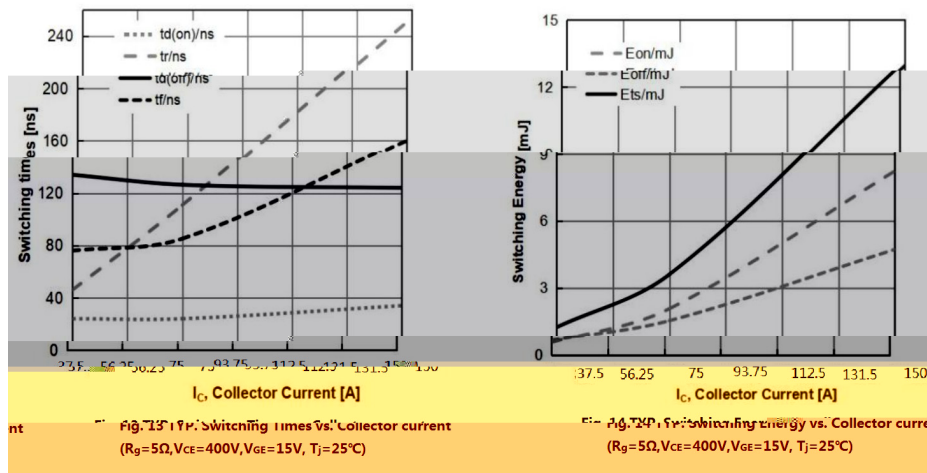

 Fig. 11 TYP. Switching Times vs. Junction Temperature
 ($V_{ce} = 400\text{V}$, $V_{ge} = 15\text{V}$, $I_c = 75\text{A}$, $R_g = 5\Omega$)

 Fig. 12 TYP. Switching Energy vs. Junction Temperature
 ($V_{ce} = 400\text{V}$, $V_{ge} = 15\text{V}$, $I_c = 75\text{A}$, $R_g = 5\Omega$)



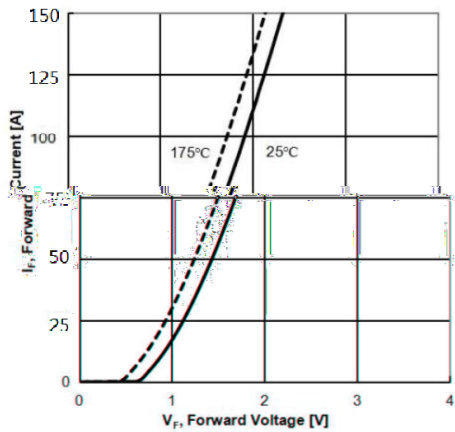
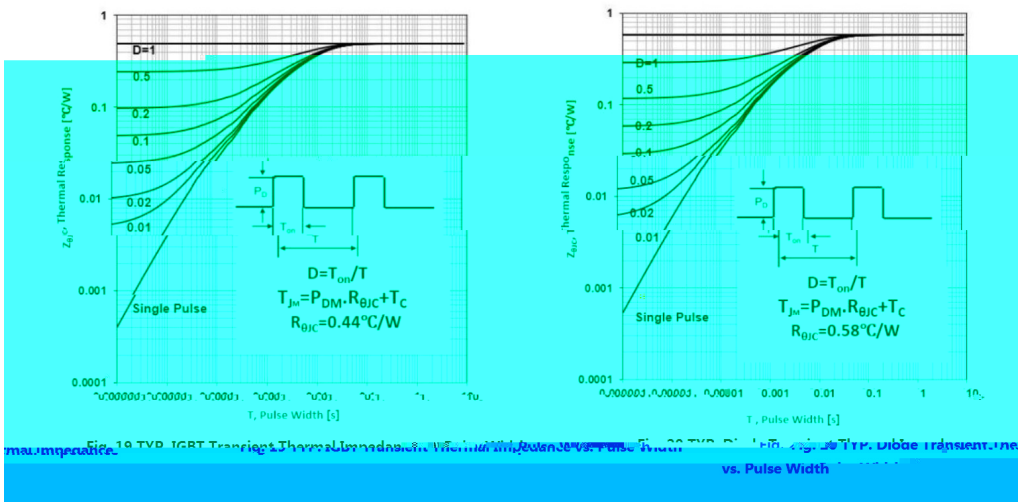
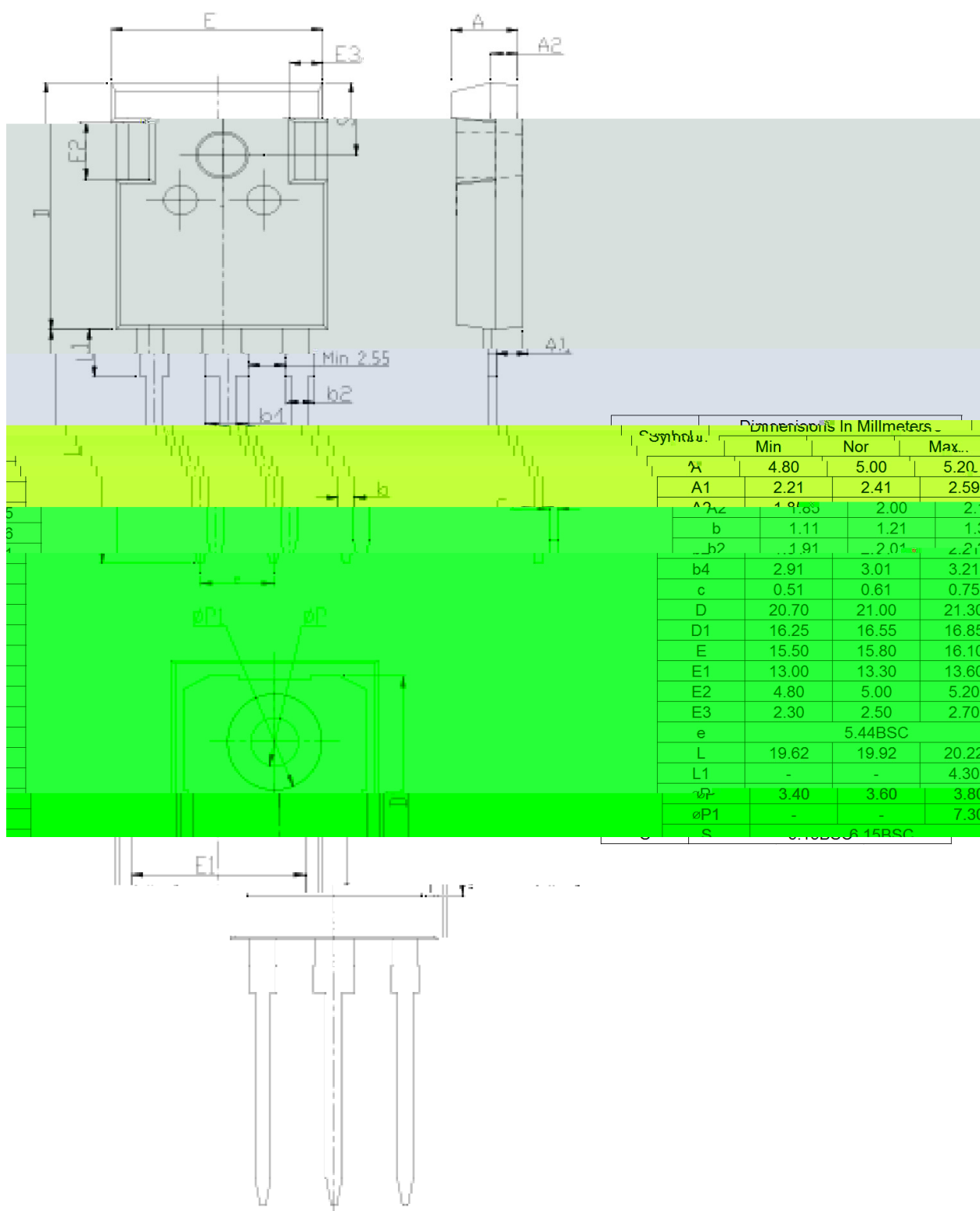
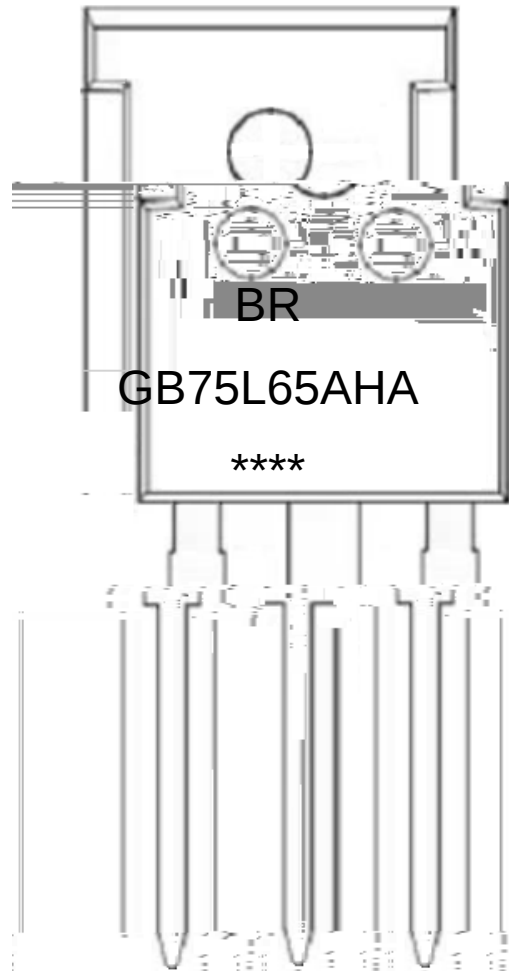


Fig. 21 TYP. Forward characteristic of Diode





BR

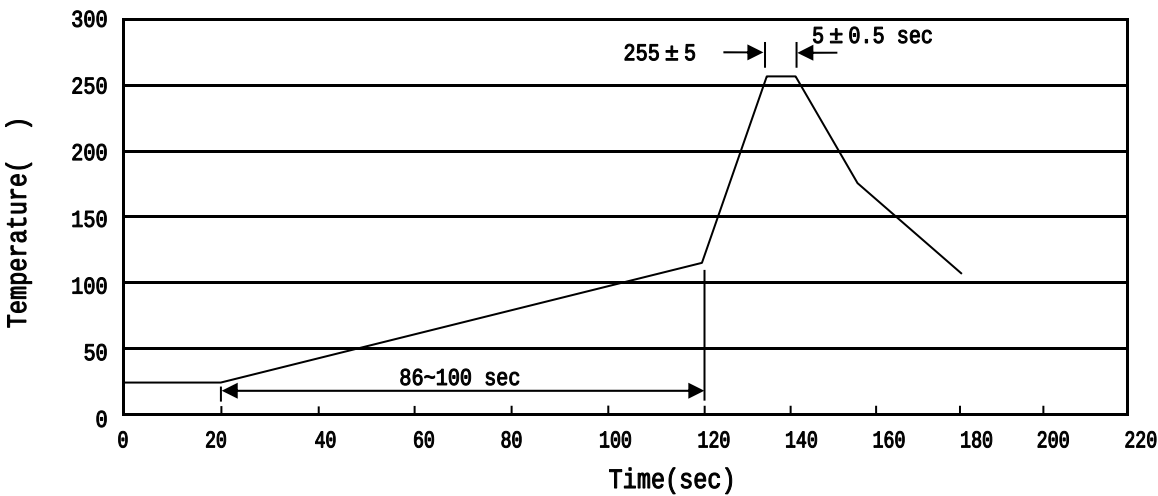
GB75L65AHA

Note:

BR: Company Code

GB75L65AHA: Product Type Code

****: Lot No. Code, code change with Lot No.



Note:

- 1

25 150

60 90sec;

1.Preheating:25~150 , Time:60~90sec.
- 2

255±5

5±0.5sec;

2.Peak Temp.:255±5 , Duration:5±0.5sec.
- 3

2 10 /sec.

3. Cooling Speed: 2~10 /sec.

270±5

10±1 sec.

Temp.:270±5

Time:10±1 sec

/ TUBE

Package Type	Units					Dimension (unit mm³)		
	Units/Tube /	Tubes/Inner Box /	Units/Inner Box /	Inner Boxes/Outer Box /	Units/Outer Box /	Tube	Inner Box	Outer Box
TO-247	30	15	450	5	2250	520×44×6	580×158×55	595×300×178

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