

BRGB75L65AHA

Rev.A Dec.-2025

TO-247

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

$V_{CES} = 650V$

/ Absolute Maximum Ratings(Ta=25)

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		$R_{\theta JC}$	0.44	/W
Maximum Diode Junction-to-Case		$R_{\theta JC}$	0.58	/W

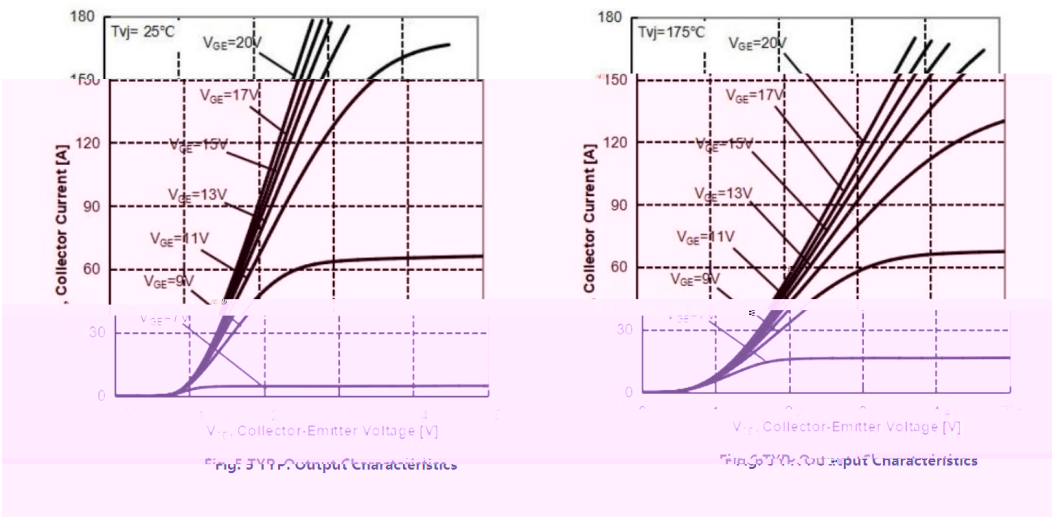
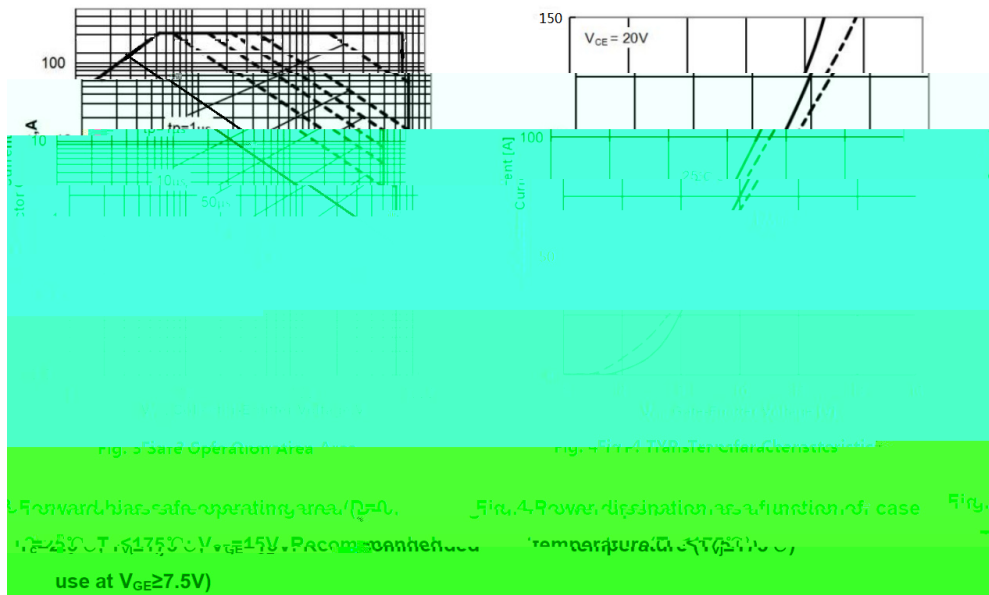
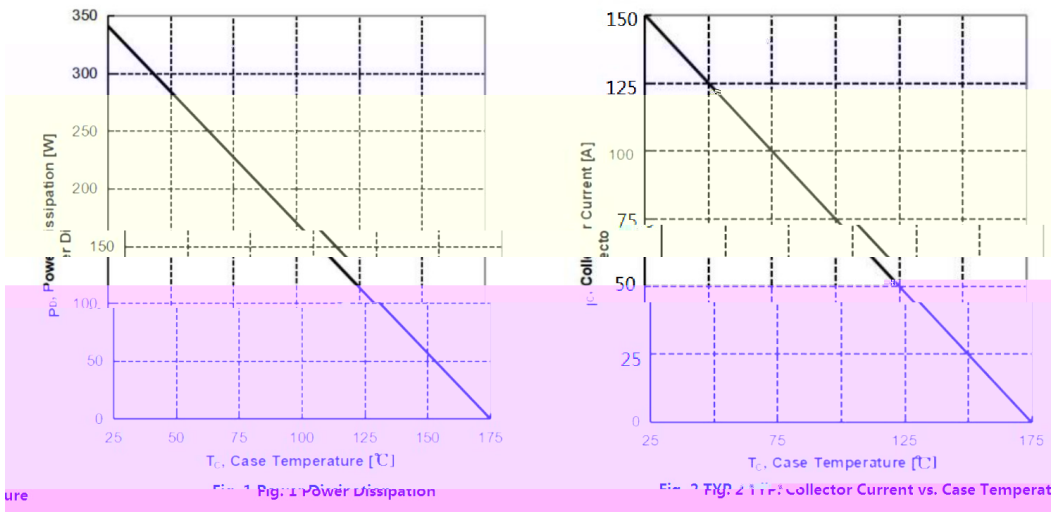
/ Electrical Characteristics(Ta=25)

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		

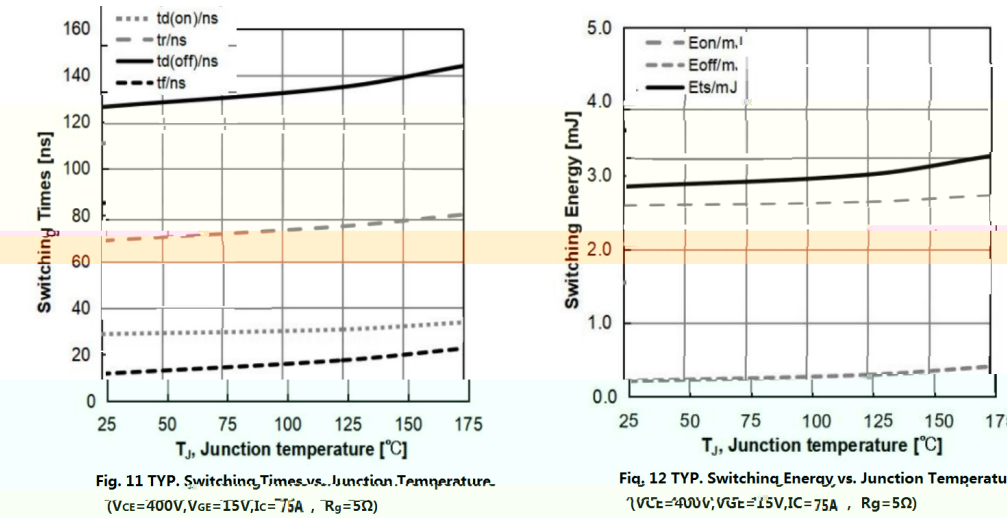
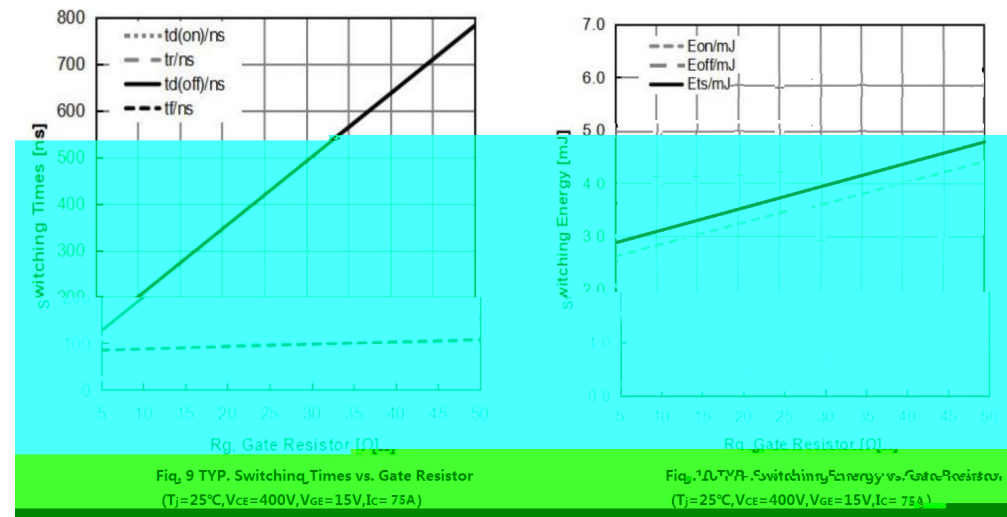
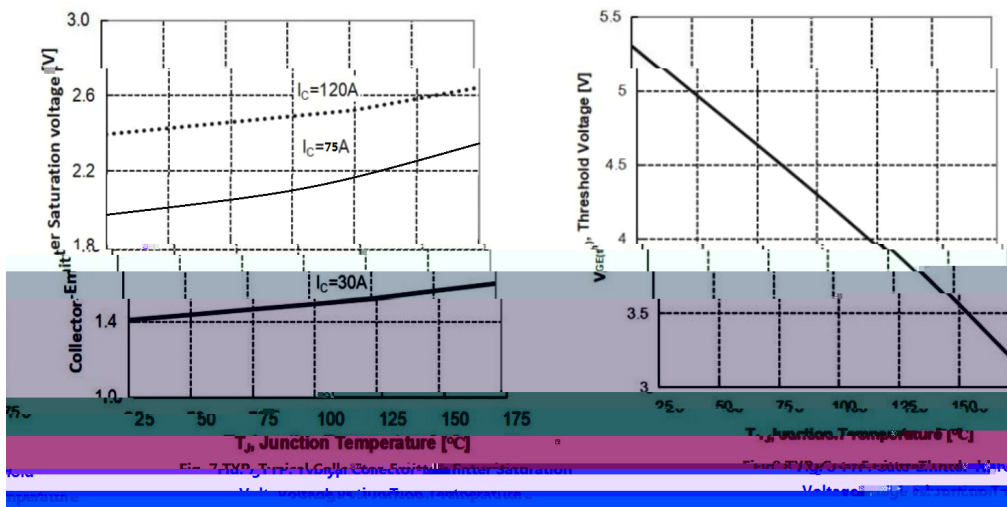
/ Electrical Characteristics(Ta=25)

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}	$V_R=400V,$ $I_F=40A$ $dI_F/dt=200$ 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		

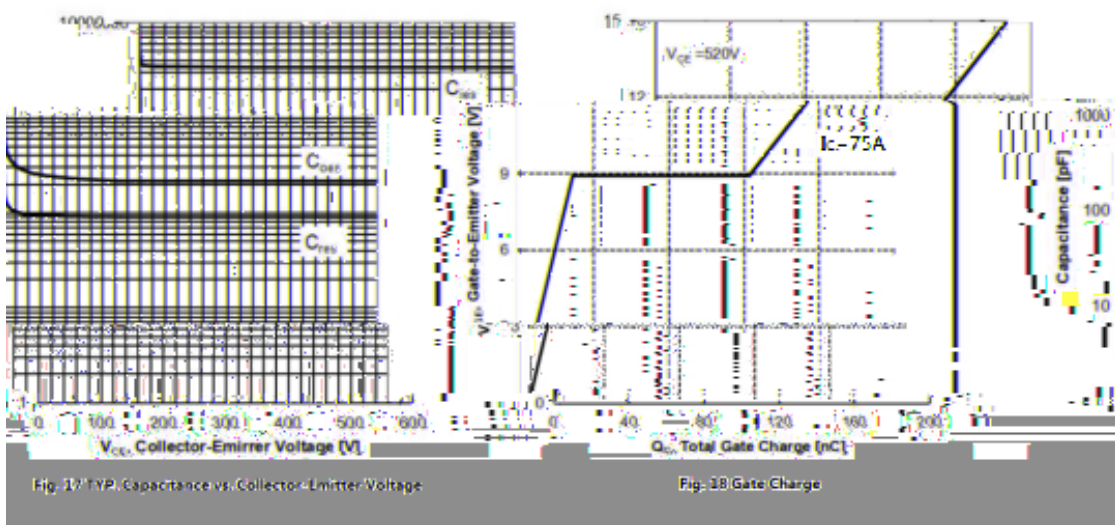
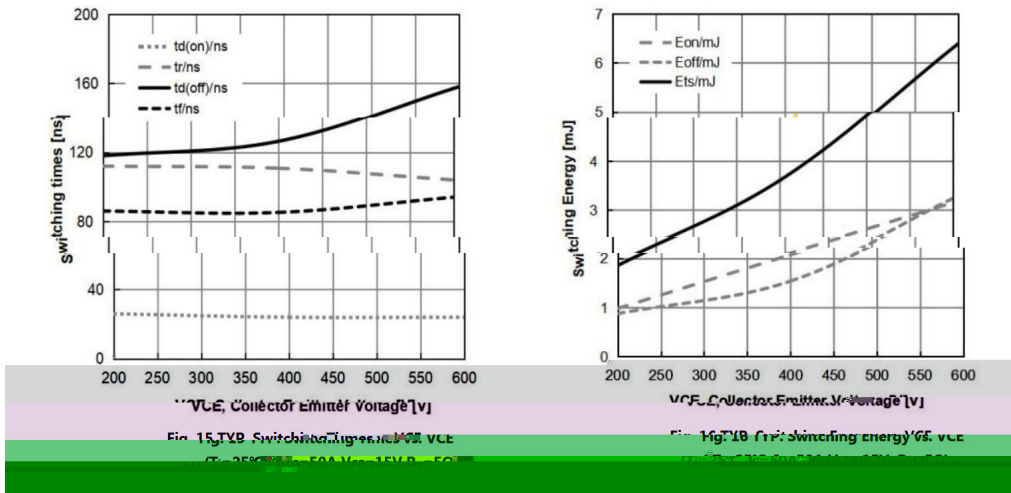
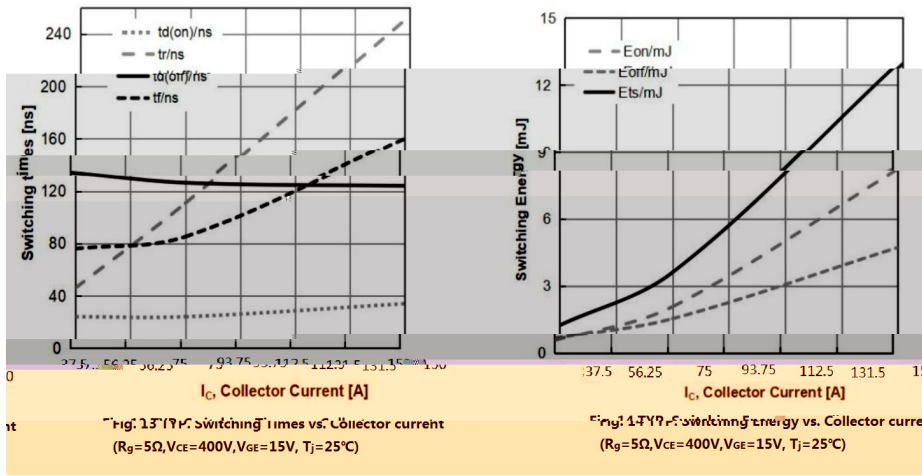
/ Electrical Characteristic Curve



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/ **Electrical Characteristic Curve**

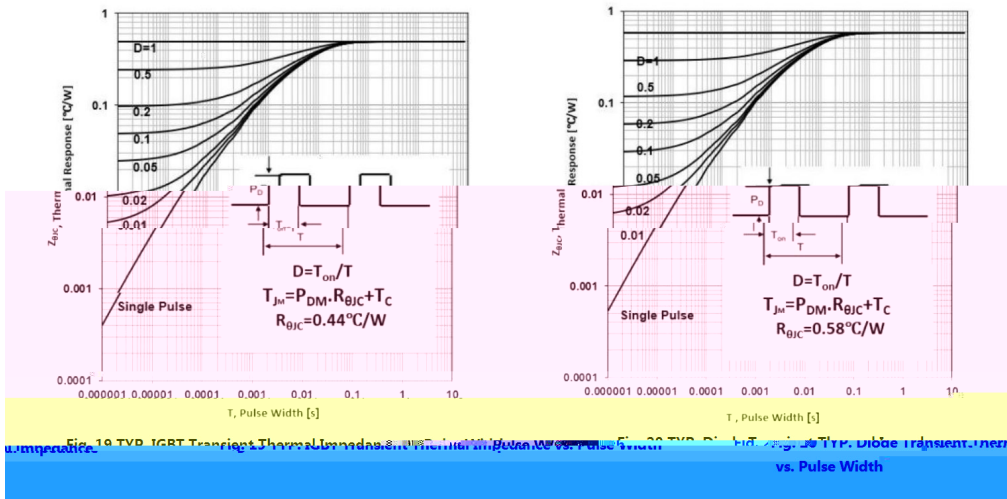


Fig. 19 TYP. IGBT Transient Thermal Impedance vs. Pulse Width

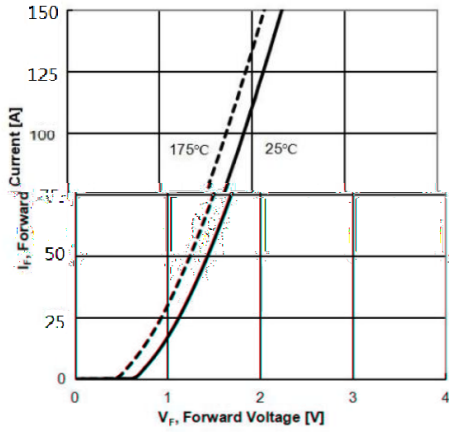
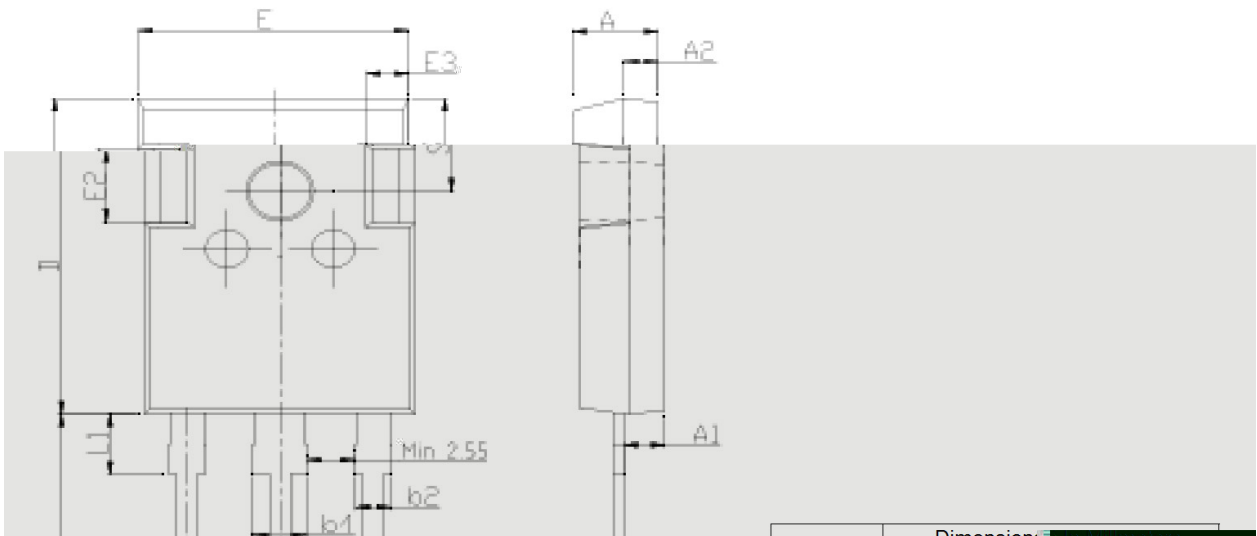
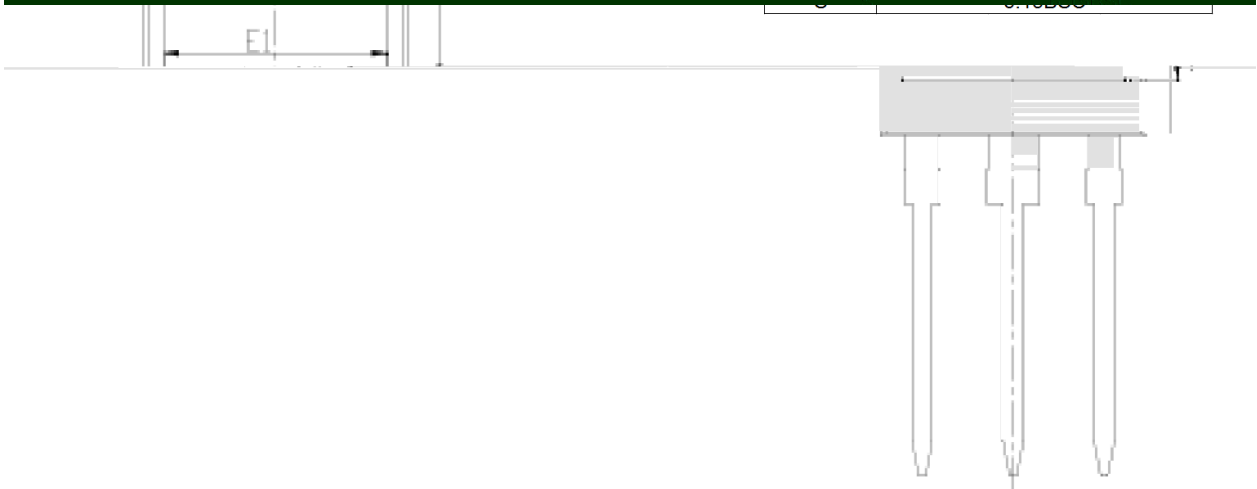


Fig. 21 TYP. Forward characteristic of Diode

/ Package Dimensions



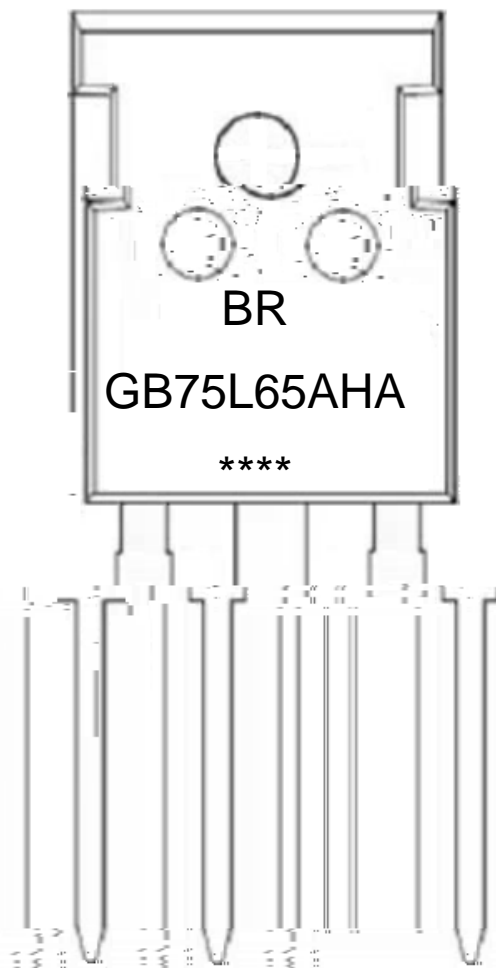
Symbol	Dimension		
	Min	Nom	Max
E*	4.00	5.00	5.20
A1	2.21	2.41	2.5
A2	2.00	2.00	2.0
b	1.11	1.21	1.3
b2	1.01	2.01	2.1
b4	2.01	3.01	3.1
e	0.51	0.61	0.7
D	20.70	21.00	21.2
D1	19.25	19.55	19.7
D2	19.50	19.80	19.9
D3	13.00	13.30	13.5
D4	4.00	5.00	5.2
D5	3.30	3.50	3.7
e		0.40(±0.05)	
L	19.92	19.92	20.0
L1			



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/ Marking Instructions



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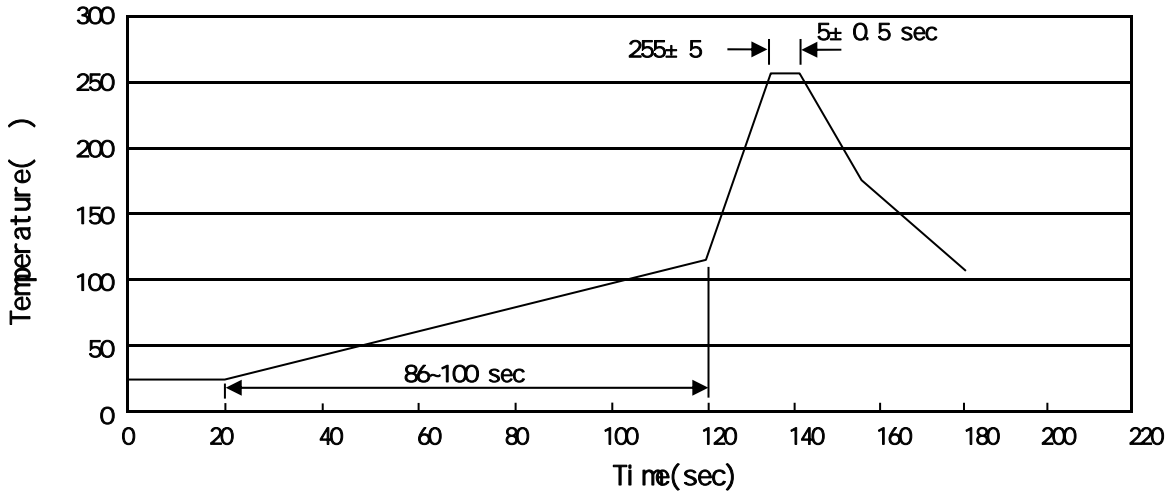
Note:

BR: Company Code

GB75L65AHA: Product Type Code

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

() / Temperature Profile for Dip Soldering(Pb-Free)



Note:

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

/ Resistance to Soldering Heat Test Conditions

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

/ Packaging SPEC.

/ TUBE

Package Type	Units					Dimension (unit: mm ³)		
	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

/ Notices

All information provided in this document is subject to legal disclaimers.