

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	80	A
	$T_C=100$		40	A
Pulsed Collector Current , Limited by T_{Jmax}		I_{CM}	160	A
Continuous Diode Forward Current	$T_C=25$	I_F	80	A
	$T_C=100$		40	A
Diode Repetitive Peak Forward Current		I_{FRM}	160	A
Short circuit withstand time		t_{sc}	9	μs
Power Dissipation	$T_C=25$	P_D	395	W
Storage Temperature Range		T_{STG}	-55 to +175	
Maximum Temperature for Soldering		T_L	260	
Maximum Junction-to-Ambient		$R_{\theta JA}$	40	/W
Maximum IGBT Junction-to-Case		$R_{\theta JC}$	0.31	/W
Maximum Diode Junction-to-Case		$R_{\theta JC}$	0.55	/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	$V_{GE(th)}$	$V_{GE}=0V$, $I_C=1mA$		4.3	5.3	6.3	V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$V_{GE}=15V$, $I_C=40A$	$T_J=25$		1.30	1.60	V
			$T_J=125$		1.50		
			$T_J=175$		1.68		
Total Gate Charge	Q_g	$V_{GE}=15V$, $V_{CC}=520V$ $I_C=40A$			320		nC
Gate to Emitter Charge	Q_{ge}				30		
Gate to Collector Charge	Q_{gc}				35		

Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit	
Turn-On Delay Time	$t_{d(on)}$	$V_{GE}=15V,$ $V_{CE}=400V$ $I_C=40A,$ $R_G=5\Omega$ Inductive Load	$T_C=25$		32		ns	
			$T_C=175$		30			
Turn-On Rise Time	t_r		$T_C=25$		25		ns	
			$T_C=175$		27			
Turn-Off Delay Time	$t_{d(off)}$		$T_C=25$		187		ns	
			$T_C=175$		202			
Turn-Off Fall Time	t_f		$T_C=25$		15		ns	
			$T_C=175$		18			
Turn-On Energy	E_{on}		$T_C=25$		0.95		mJ	
			$T_C=175$		1.45			
Turn-Off Energy	E_{off}		$T_C=25$		0.65		mJ	
			$T_C=175$		1.20			
Total Switching Energy	E_{ts}		$T_C=25$		1.60		mJ	
			$T_C=175$		2.65			
Input Capacitance	C_{ies}	$V_{GE}=0V,$ $V_{CE}=25V$ $f=1MHz$			5660		pF	
Output Capacitance	C_{oes}				260		pF	
Reverse Transfer Capacitance	C_{res}				154		pF	
			$T_J=25$		1.30	1.60		

Diode Forward Voltage

V_F

$I_F=40A$

$T_J=150$

1.18

Reverse

Rev

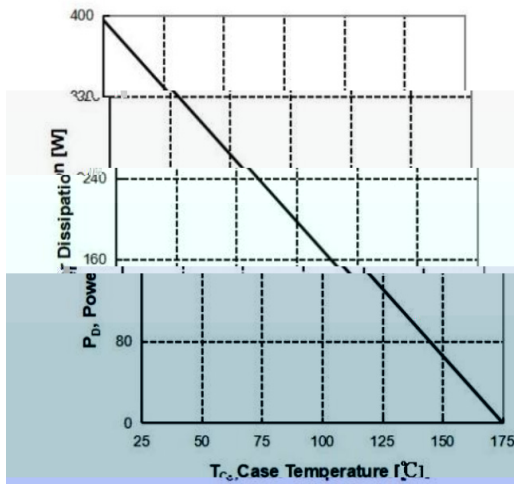


Fig. 1 TYP. Power Dissipation

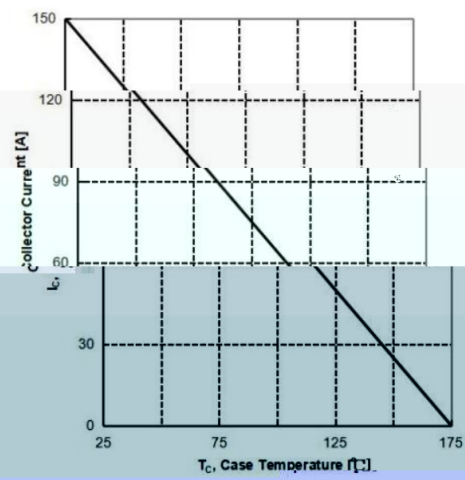


Fig. 2 Collector Current vs. Case Temperature

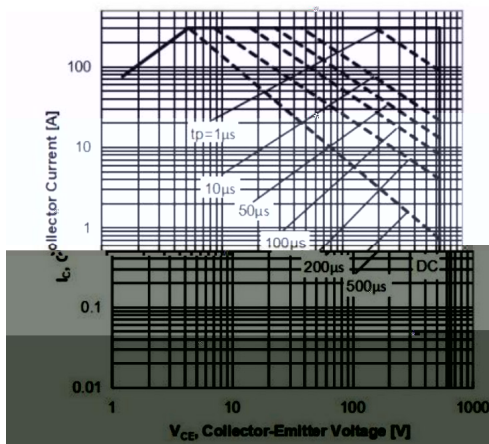


Fig. 3 Safe Operation Area

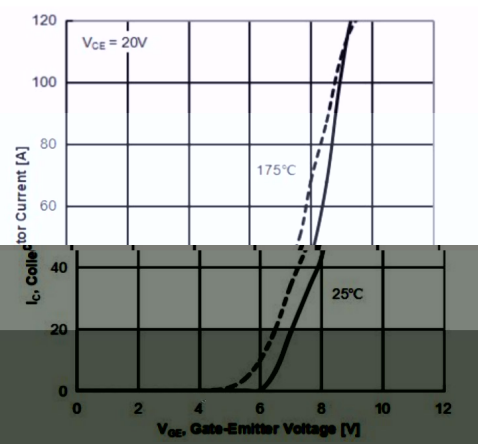


Fig. 4 TYP. Transfer Characteristics

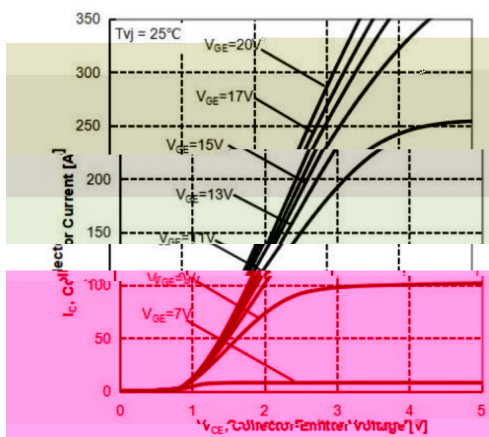


Fig. 5 TYP. Output Characteristics

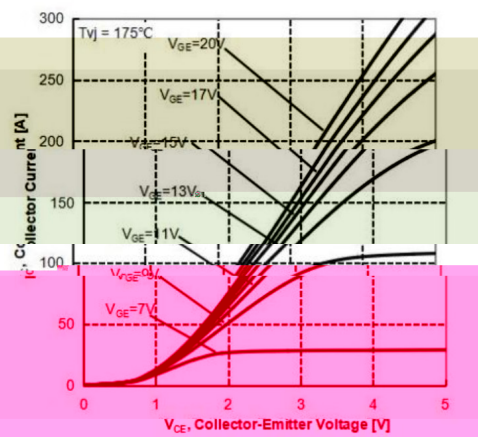
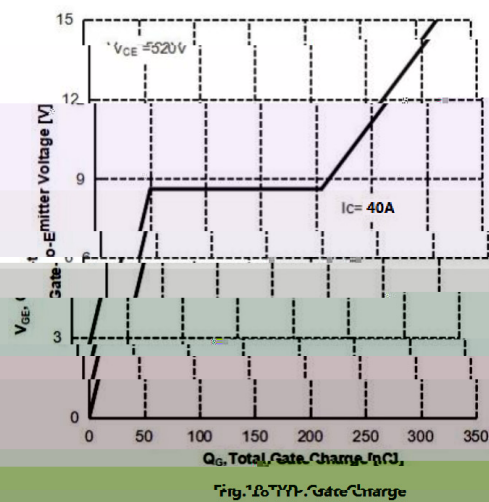
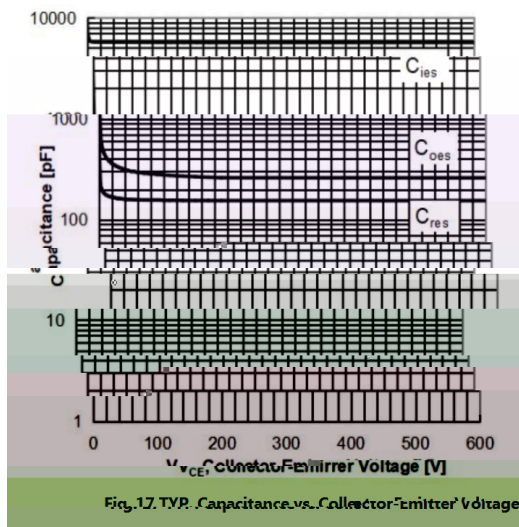
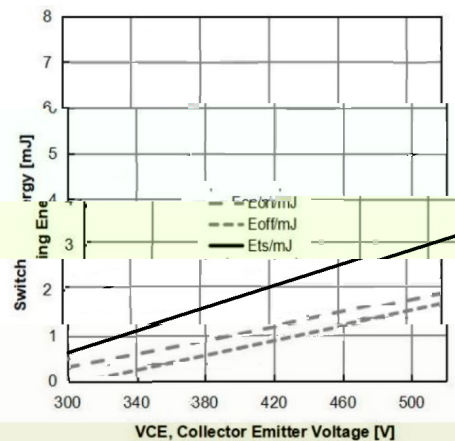
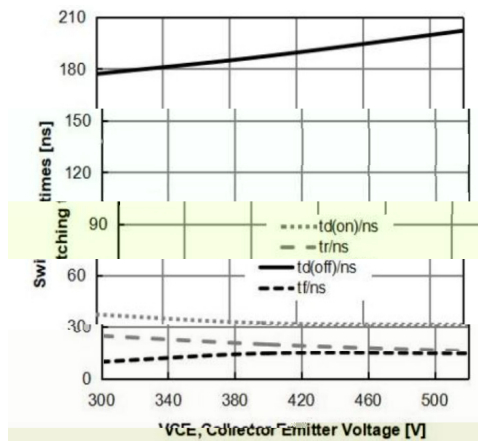
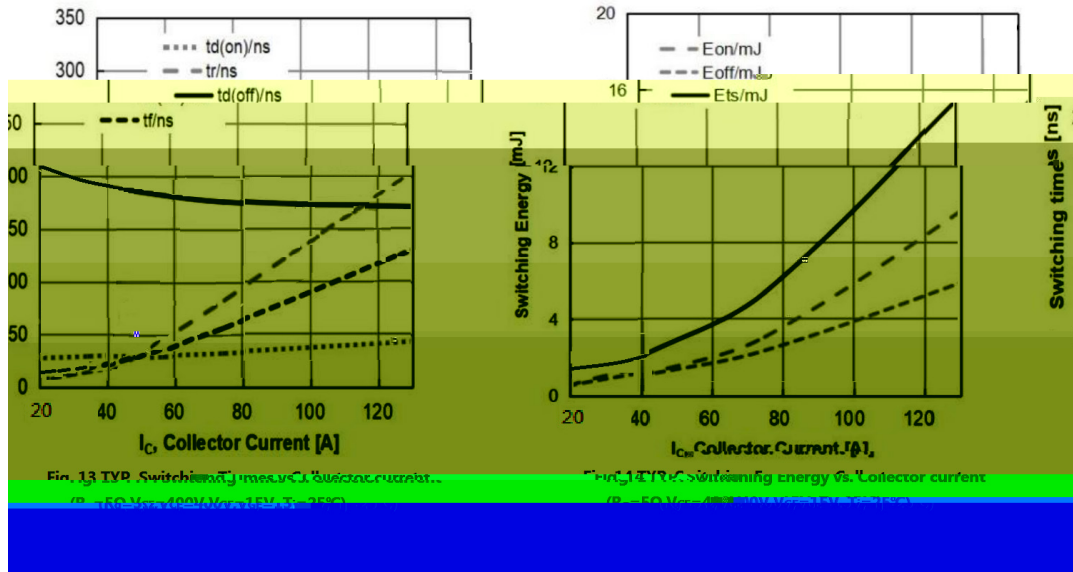


Fig. 6 Output Characteristics





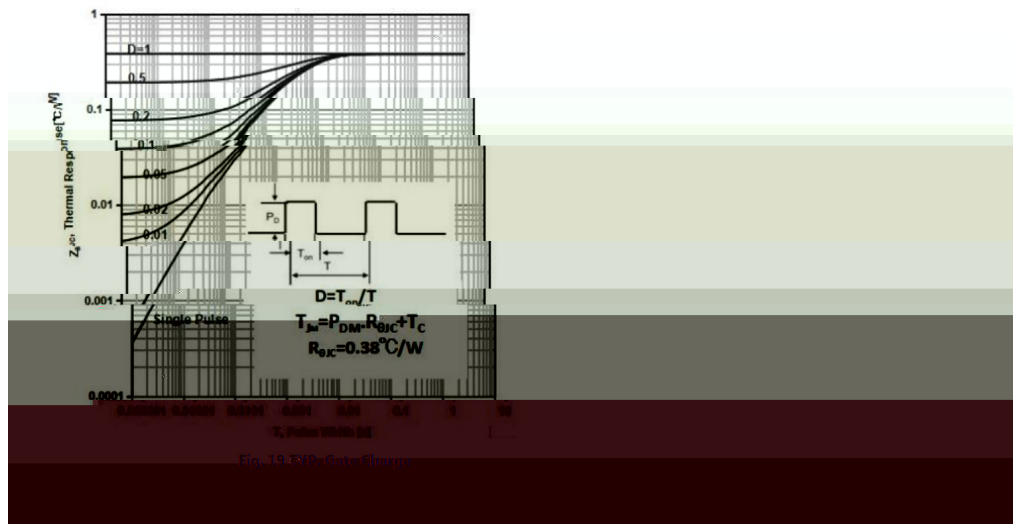
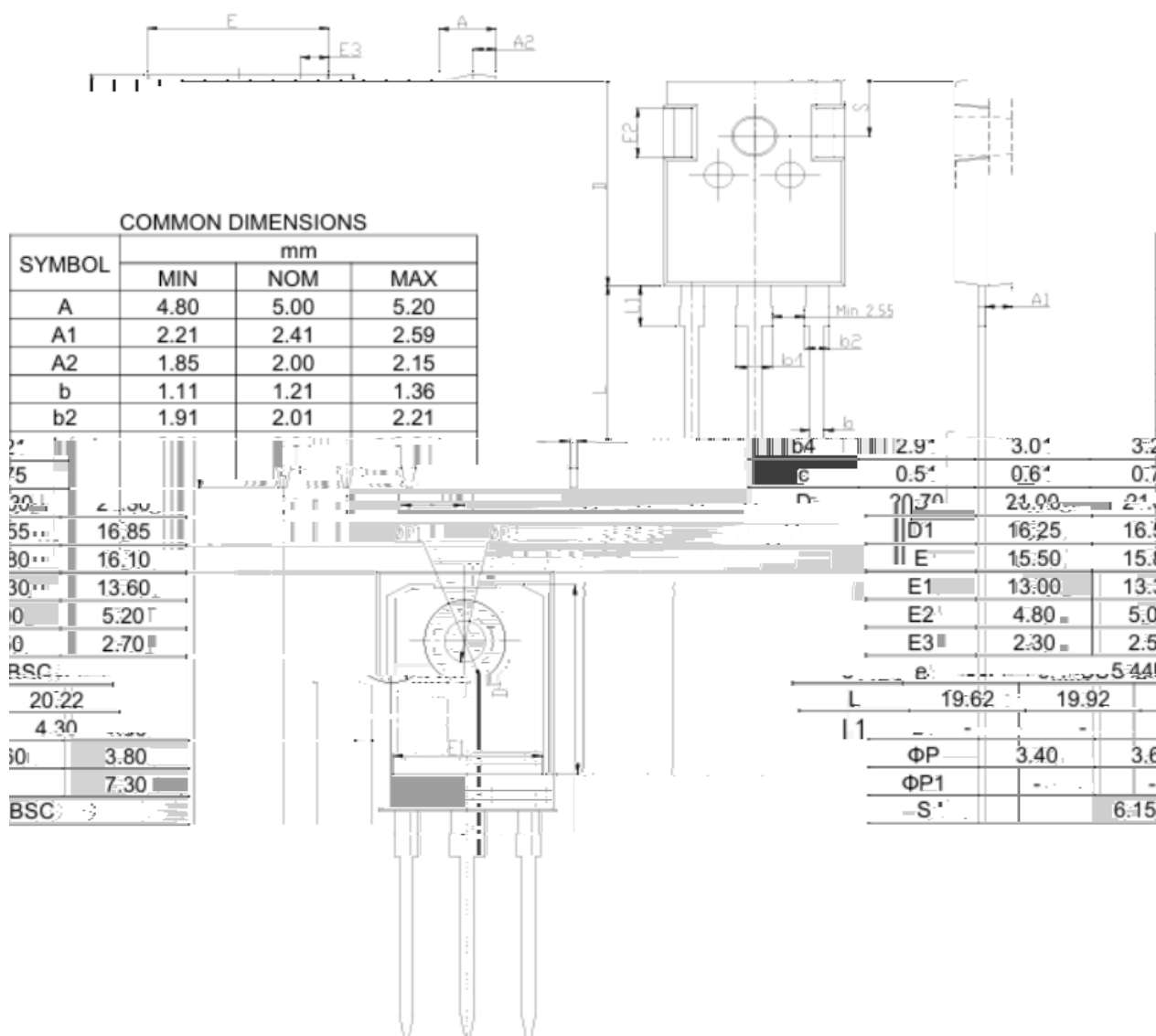
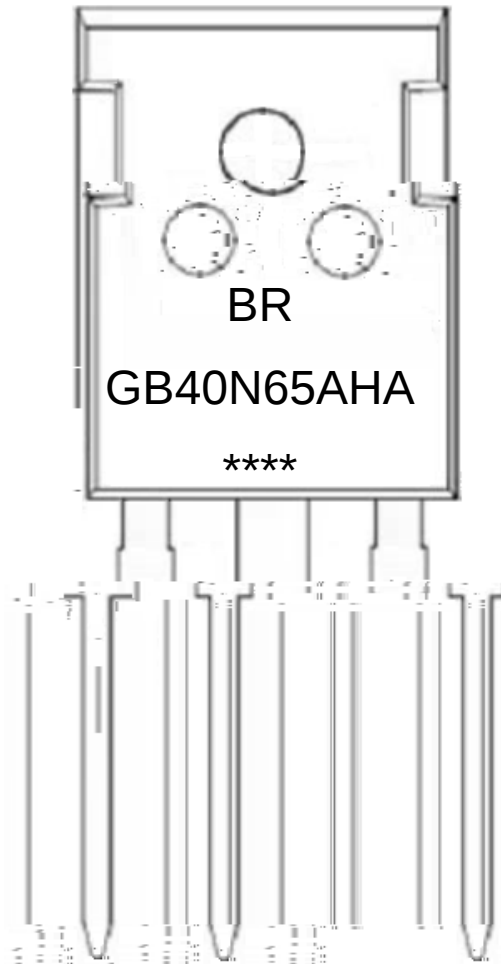


Fig. 19. PDBs Gate Driver





BR

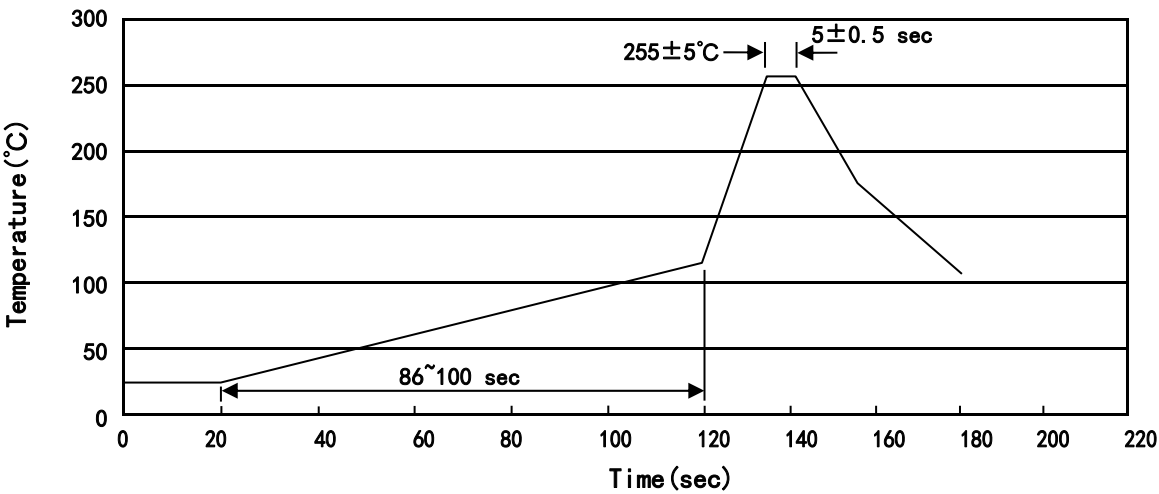
GB40N65AHA

Note:

BR: Company Code

GB40N65AHA: 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 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm³)		
	Units/Tube 只/套管	Tubes/Inner Box 套管/盒	Units/Inner Box 只/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Tube 套管	Inner Box 盒	Outer Box 箱
TO-247	30	15	450	5	2250	520×44×6	580×158×55	595×300×178

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