

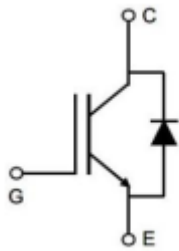
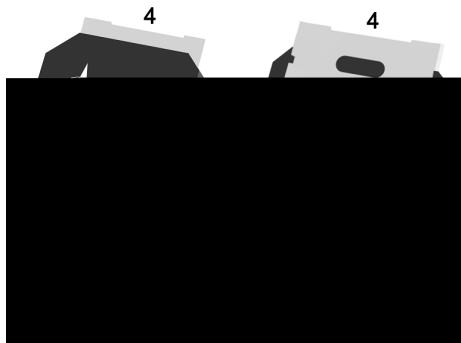
/ Descriptions

TO-252

Insulated-Gate Bipolar Transistor in a TO-252 Plastic Package.

/ Features $V_{CES} = 650V$ $I_C = 6A @ T_C = +100$ $V_{CE(SAT)} = 1.63V(\text{typ.}) @ V_{GE} = 15V$ **/ Applications**

PFC, Motordriver, Boost, UPS.

/ Equivalent Circuit**/ Pinning**

PIN1 G

PIN 2 C

PIN 3 E

PIN 4 C

/ Marking

See Marking Instructions.

/ Absolute Maximum Ratings($T_a=25$)

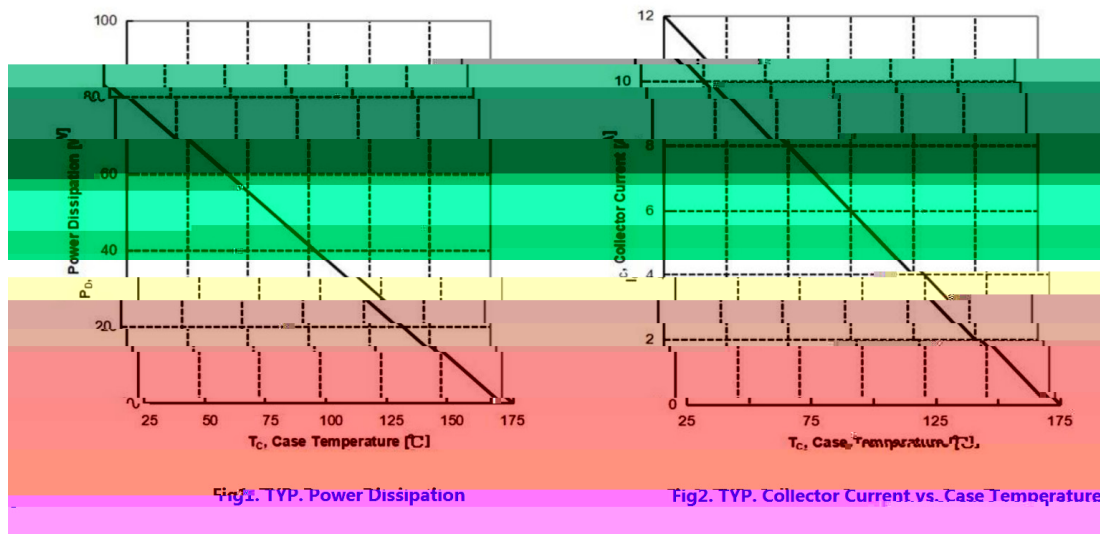
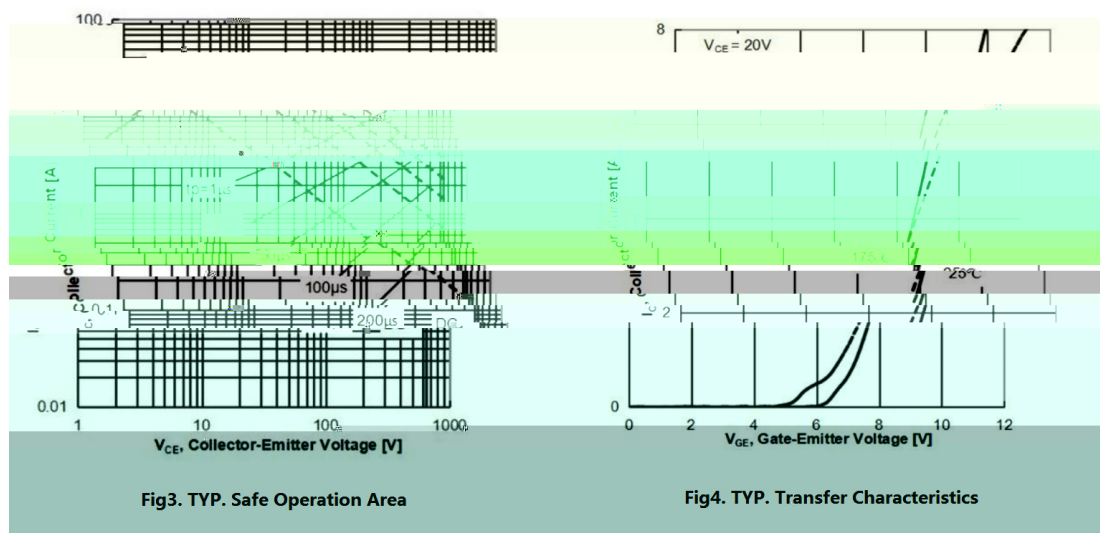
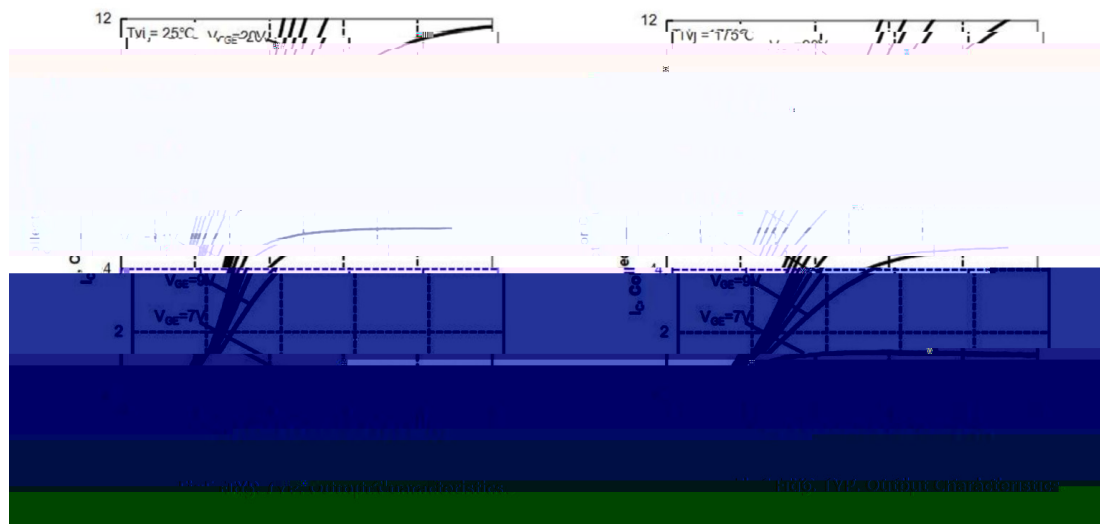
Parameter		Symbol	Rating	Unit
Collector-Emitter Voltage		V_{CES}	650	V
Gate-Emitter Voltage		V_{GES}	f 30	V
Continuous Collector Current	$T_C=+100$	I_C	6	A
	$T_C=+25$		12	A
Pulsed Collector Current , Limited by T_{Jmax}		I_{CRM}	18	A
Diode Continuous DC Forward Current	$T_C=+100$	I_F	6	A
	$T_C=+25$		12	A
Diode Repetitive Peak Forward Current		I_{FRM}	18	A
Short Circuit with standing time		t_{SC}	15	us
Power Dissipation		P_D	83	W
Storage Temperature Range		T_{STG}	-55 to +175	
Maximum lead temperature for soldering		T_L	260	
Maximum Junction-to-Ambient		R_{JA}	62.5	/W
Maximum IGBT Junction-to-Case		R_{JC}	1.80	/W
Maximum Diode Junction-to-Case		R_{JC}	2.20	/W

/ Electrical Characteristics($T_a=25$)

Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit
Collector-Emitter Breakdown Voltage	BV_{CES}	$I_C=250\mu A$ $V_{GE}=0V$		650			V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$V_{GE}=15V$, $I_C=6A$	$T_J=25$		1.63	1.98	V
			$T_J=125$		1.97		
			$T_J=175$		2.14		
Gate-Emitter Threshold Voltage	$V_{GE(th)}$	$V_{CE}=V_{GE}$ $I_C=1mA$		4.3	5.3	6.3	V
Gate-emitter Leakage Current	I_{GES}	$V_{CE}=0V$ $V_{GE}= \pm 20V$				f 200	nA
Collector-emitter Leakage Current	I_{CES}	$V_{CE}=650V$ $V_{GE}=0V$				10	uA
Input Capacitance	C_{ies}	$V_{GE}=0V$ $V_{CE}=25V$ $f=1MHz$			246		pF
Output Capacitance	C_{oes}				33		pF
Reverse Transfer Capacitance	C_{res}				3.8		pF
Total Gate Charge	Q_g				9		nC
Gate to Emitter Charge	Q_{ge}	$V_{GE}=15V$ $V_{CC}=520V$ $I_C=6A$			3		nC
Gate to Collector Charge	Q_{gc}				3.2		nC

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Turn-On Delay Time	$t_{d(on)}$	$T_1=25$ $I_C=6A$ $R_G=5$		9		ns
Turn-On Rise Time	t_r			12		ns
Turn-Off Delay Time	$t_{d(off)}$			39		ns
Turn-Off Fall Time	t_f					
$t_{d(off)tot}$						

/ Electrical Characteristic Curve



Electrical Characteristic Curve

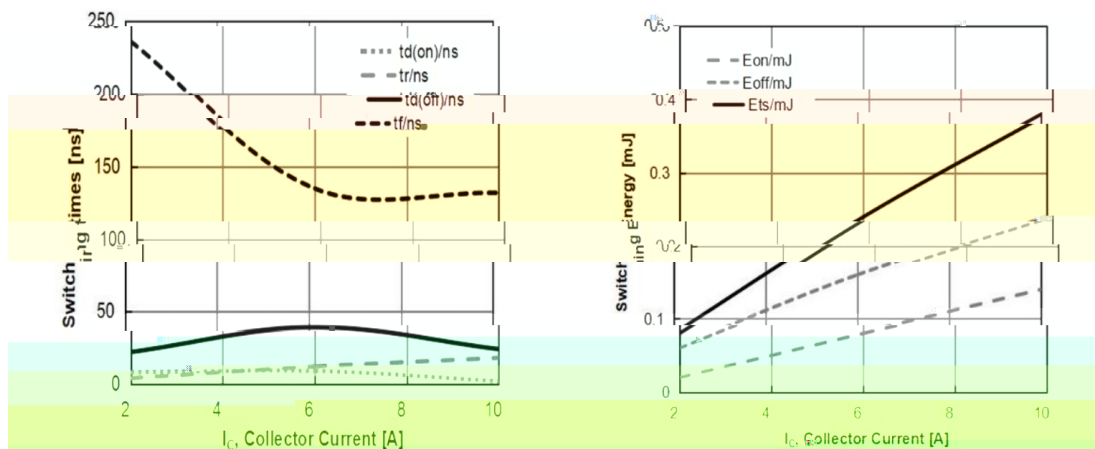


Figure 14: Typical Switching Times vs. Collector Current

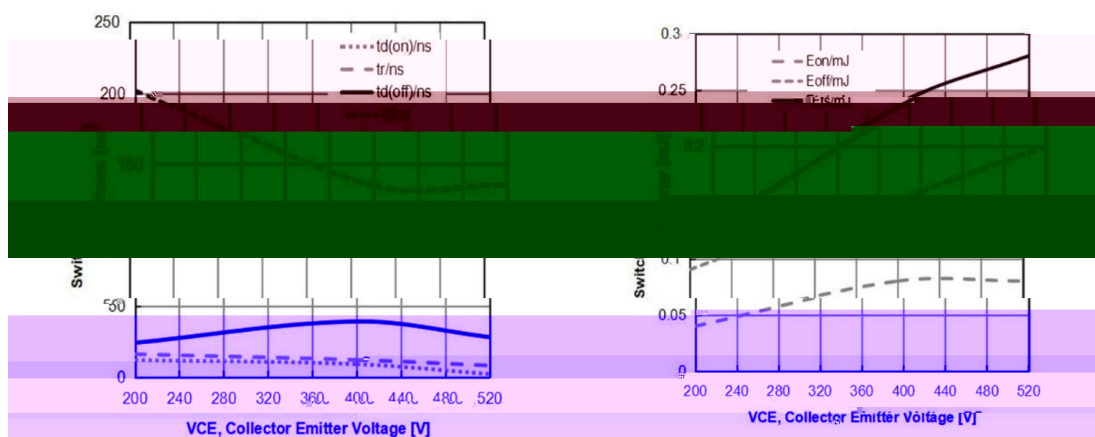


Figure 16: Typical Switching Times vs. VCE

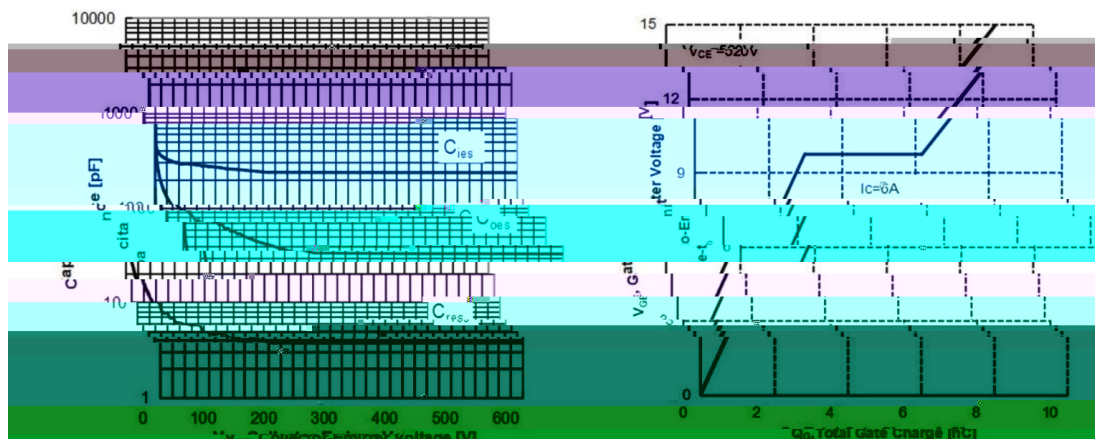
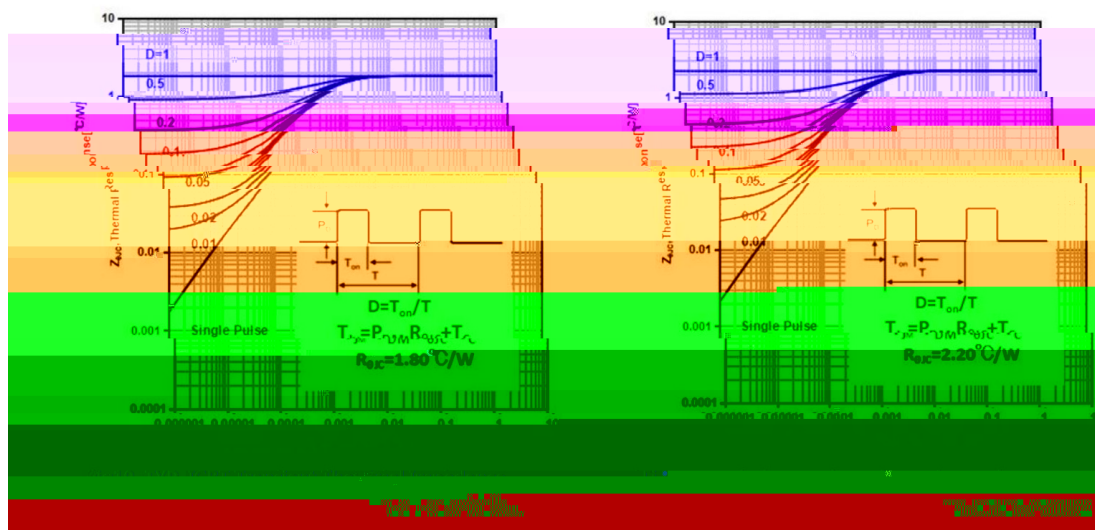
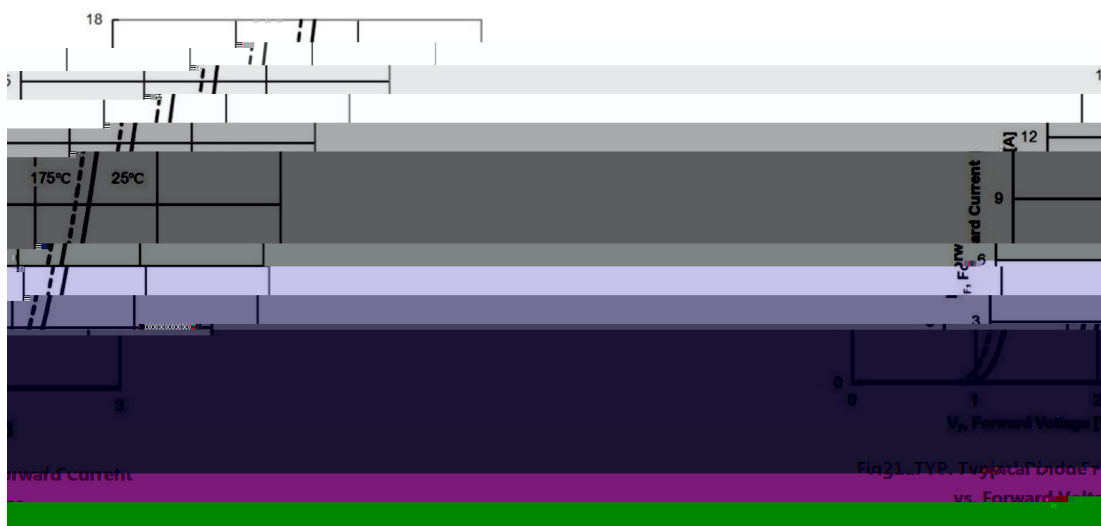
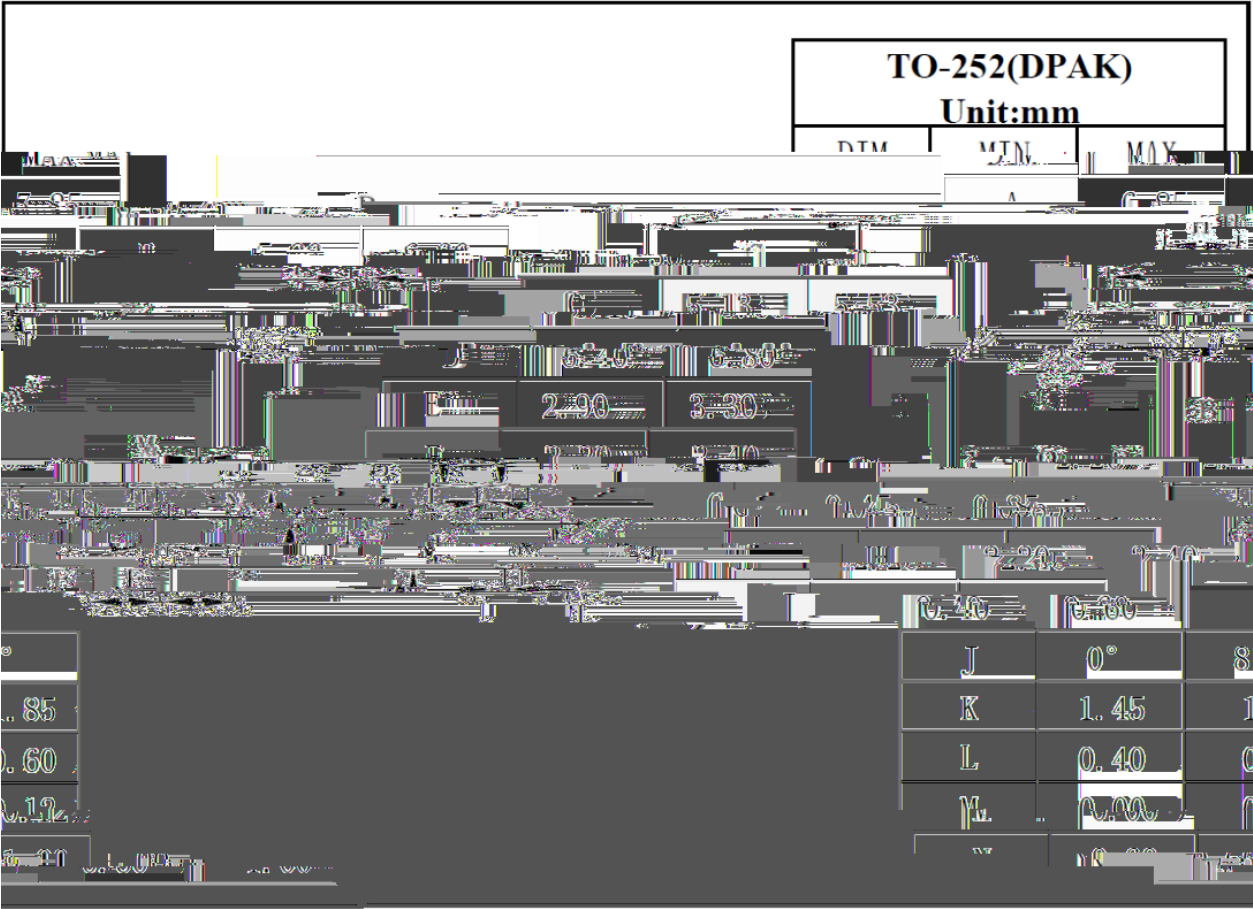


Figure 18: Typical Capacitance vs. Collector-Emitter Voltage

/ Electrical Characteristic Curve



/ Package Dimensions



BRGB6N65DP