/ Descriptions

TO-252

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

/ Features

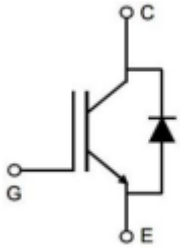
V_{CES} =650V I_C =6A @T_C=+100

$V_{CE(SAT)}$=1.63V(typ.)@ V_{GE}=15V

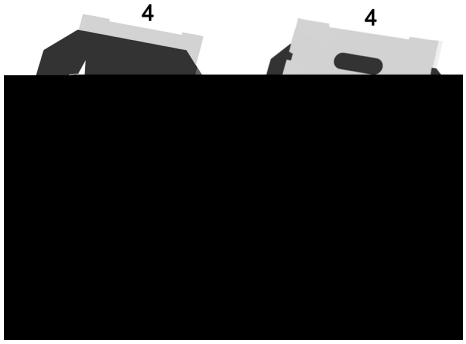
/ Applications

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(Ta=25)

Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit
Collector-Emitter Breakdown Voltage	BV_{CES}	I_C=250uA 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}= ±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	V_{GE}=15V V_{CC}=520V I_C=6A			9		nC
Gate to Emitter Charge	Q_{ge}				3		nC
Gate to Collector Charge	Q_{gc}				3.2		nC

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

/ Electrical Characteristic Curve

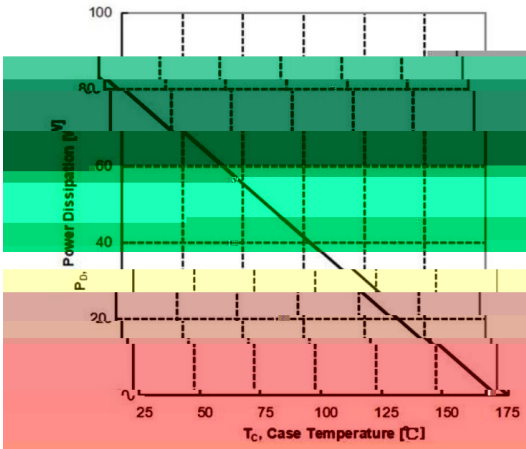


Fig1. TYP. Power Dissipation

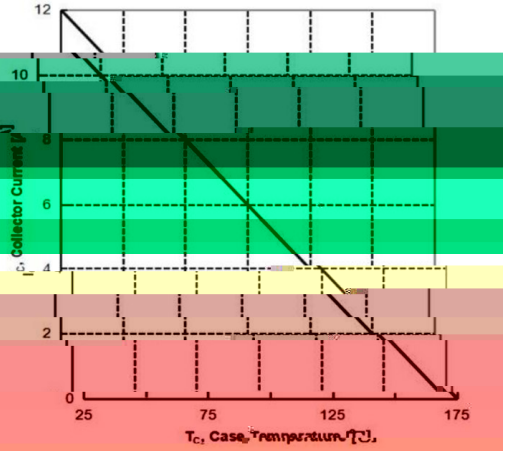


Fig2. TYP. Collector Current vs. Case Temperature

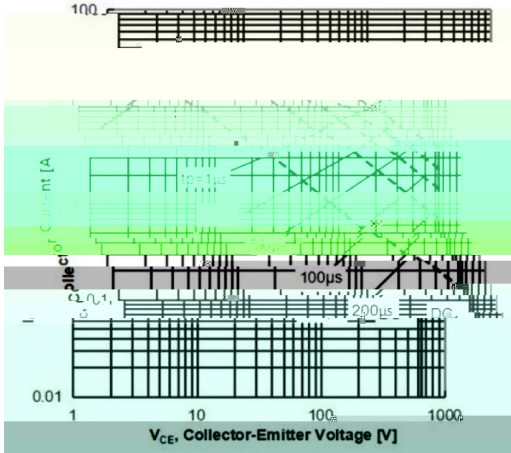


Fig3. TYP. Safe Operation Area

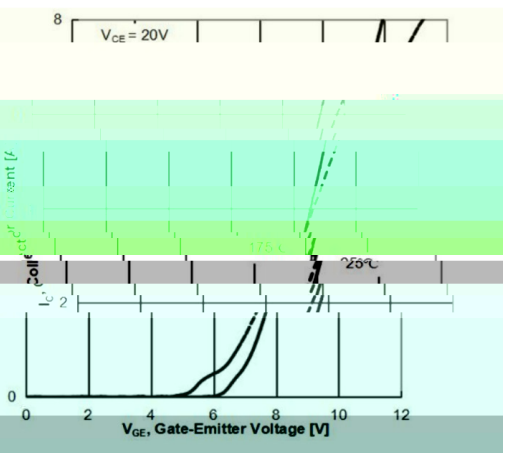
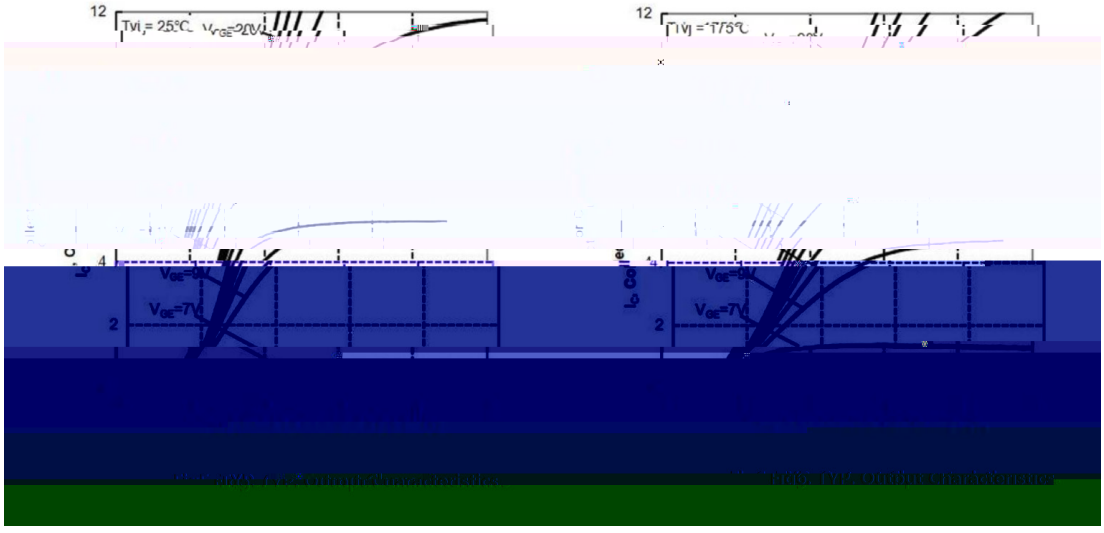
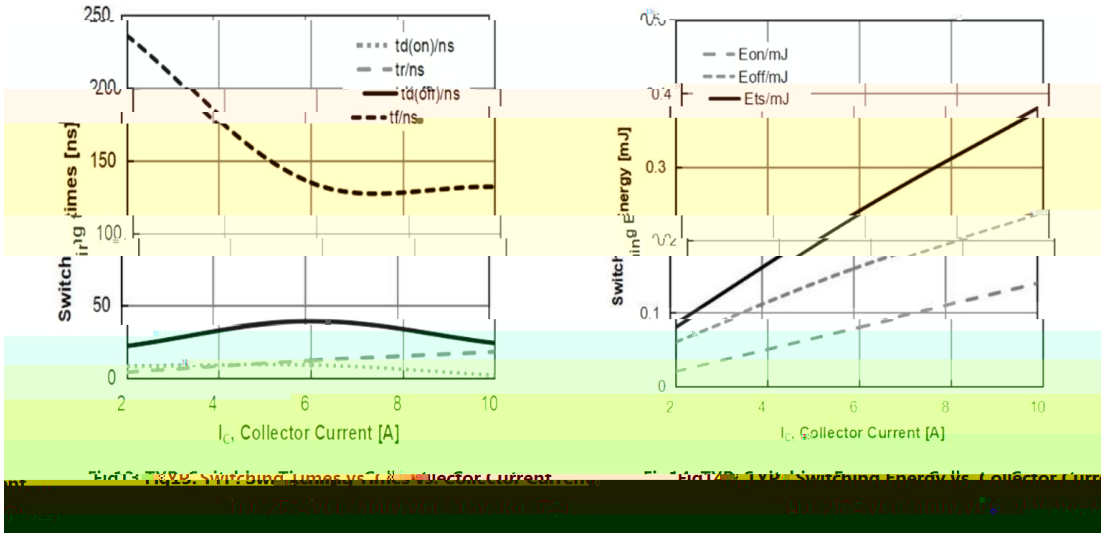
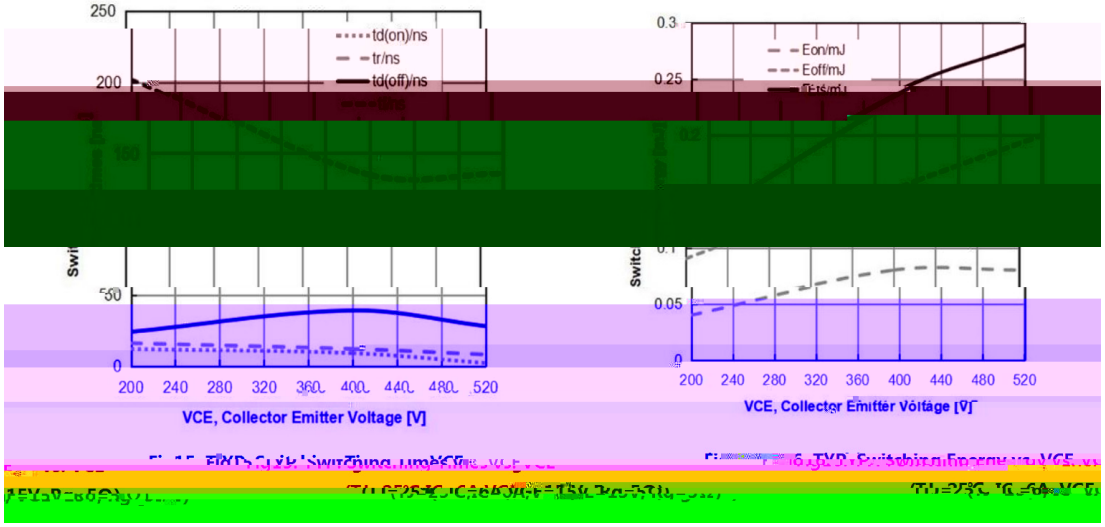


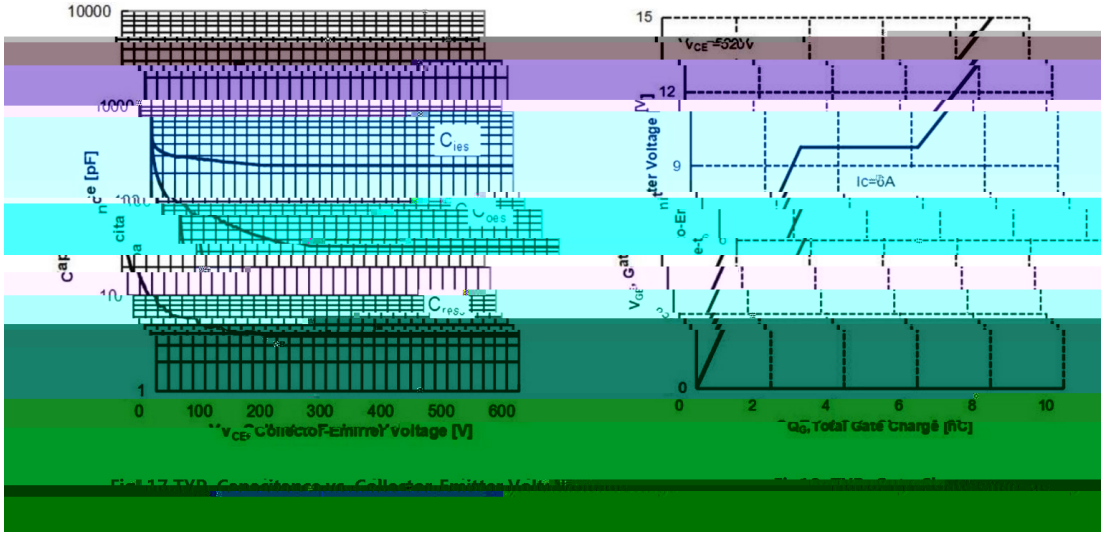
Fig4. TYP. Transfer Characteristics



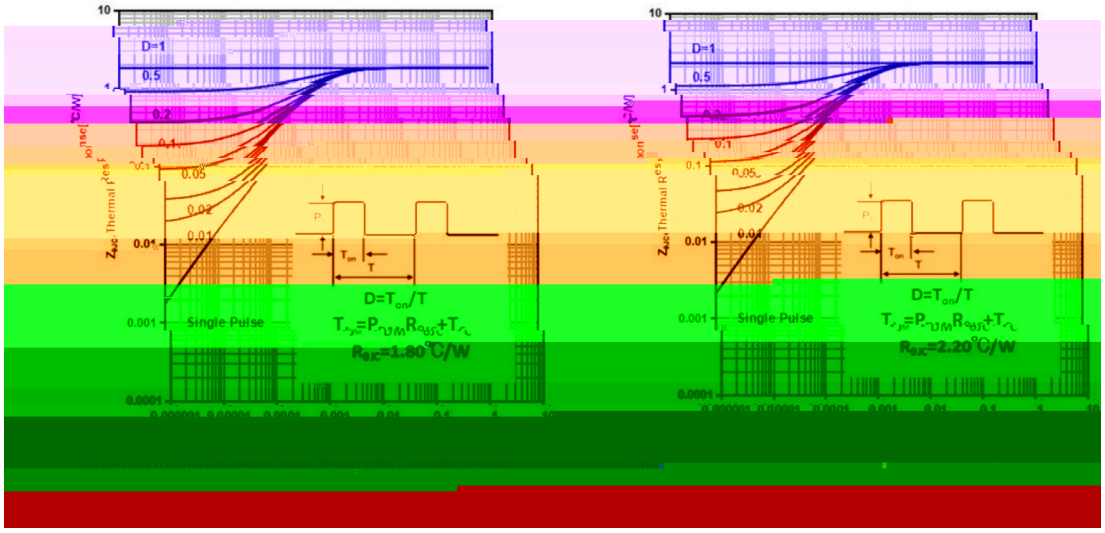
/ Electrical Characteristic Curve







/ Electrical Characteristic Curve



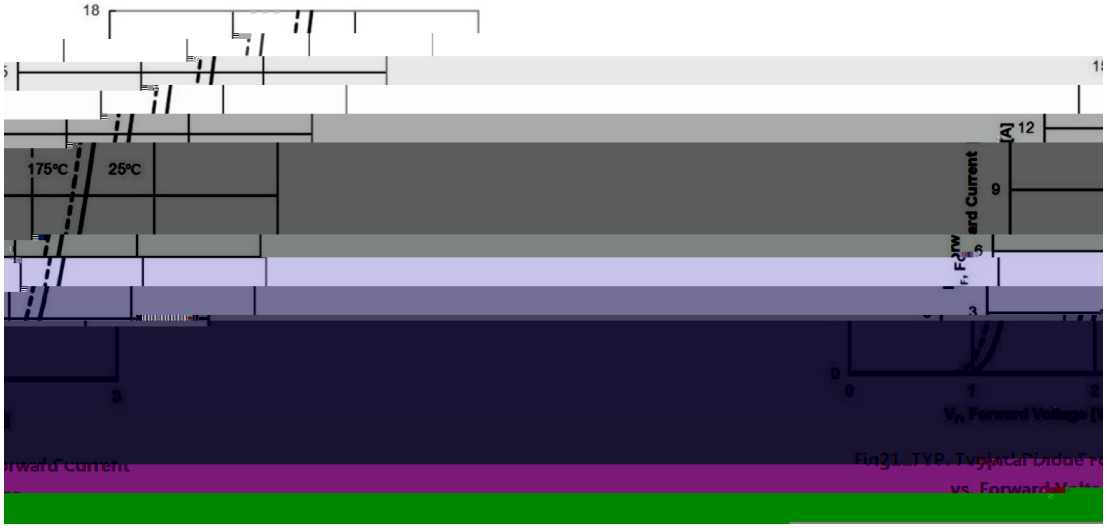
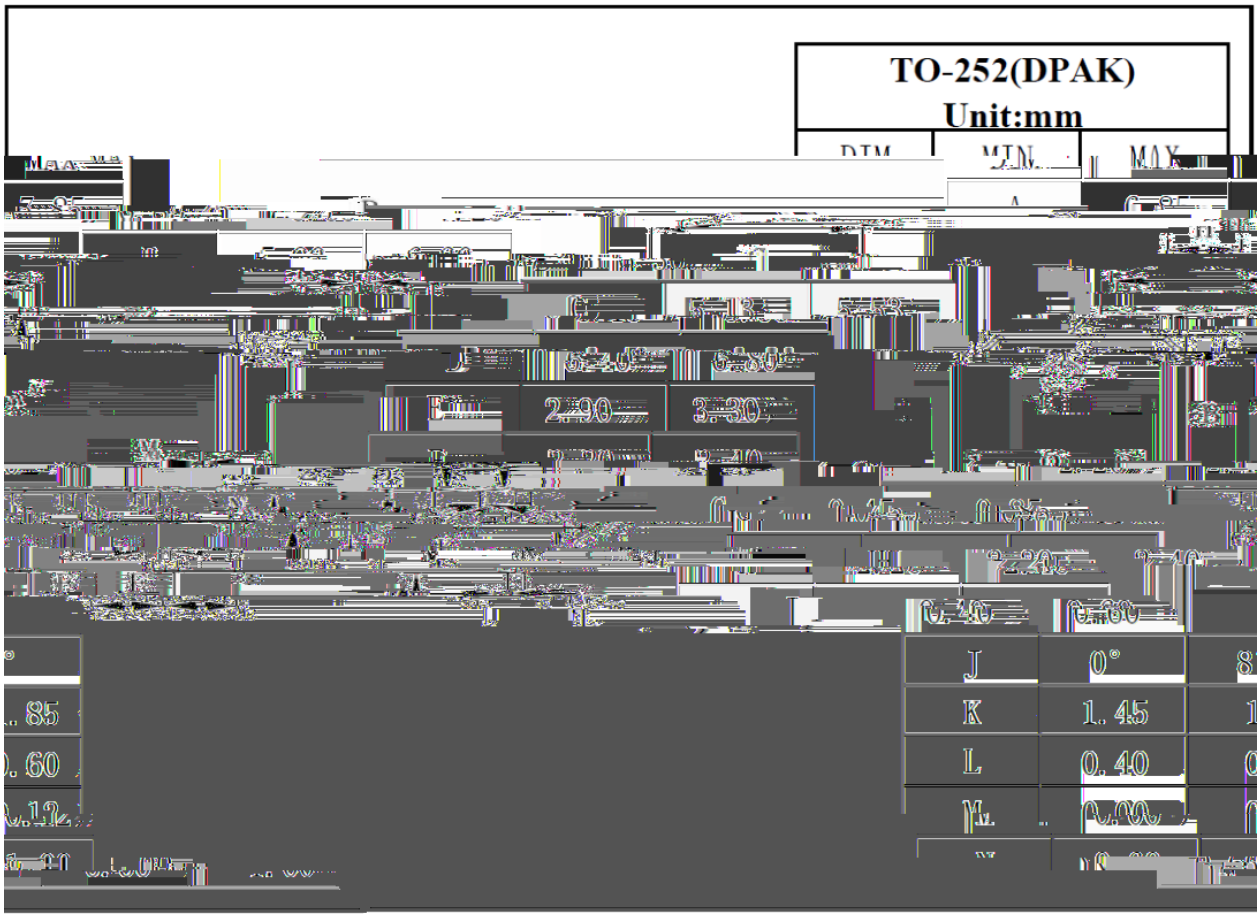


Fig21. TYP. Typical Diode Forward Current vs. Forward Voltage

/ Package Dimensions



BRGB6N65DP