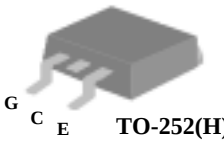
Advanced Power Electronics Corp.

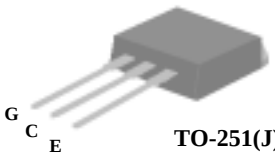
N-CHANNEL INSULATED GATE BIPOLAR TRANSISTOR

Description

*** High Input Impedance**
*** High Pick Current Capability**
*** 4.5V Gate Drive**
*** Strobe Flash Applications**

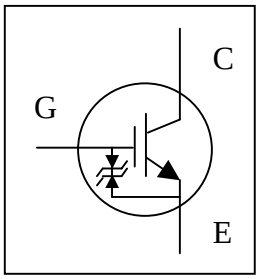


TO-252(H)



TO-251(J)

V_{CES}	450V
I_{CP}	130A



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{CES}	Collector-Emitter Voltage	450	V
V_{GE}	Gate-Emitter Voltage	± 6	V
I_{GEP}	Pulsed Gate-Emitter Voltage	± 8	V
I_{CP}	Pulsed Collector Current	130	A
P_D@T_C=25℃	Maximum Power Dissipation	20	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Electrical Characteristics@T_j=25°C(unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
I_{GES}	Gate-Emitter Leakage Current	V_{GE}=6V, V_{CE}=0V	-	-	10	uA
I_{CES}	Collector-Emitter Leakage Current (Tj=25℃)	V_{CE}=450V, V_{GE}=0V	-	-	10	uA
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	V_{GE}=4.5V, I_{CP}=130A (Pulsed)	-	5	8	V
$V_{GE(th)}$	Gate Threshold Voltage	V_{CE}=V_{GE}, I_C=250uA	-	-	1.2	V
Q_g	Total Gate Charge	I_C=40A	-	51	-	nC
Q_{ge}	Gate-Emitter Charge	V_{CE}=300V	-	2	-	nC
Q_{gc}	Gate-Collector Charge	V_{GE}=5V	-	5.4	-	nC
$t_{d(on)}$	Turn-on Delay Time	V_{CC}=200V	-	5.5	-	ns
t_r	Rise Time	I_C=40A	-	72	-	ns
$t_{d(off)}$	Turn-off Delay Time	R_G=25Ω	-	640	-	ns
t_f	Fall Time	V_{GE}=5V	-	2.6	-	us
C_{ies}	Input Capacitance	V_{GE}=0V	-	2095	-	pF
C_{oes}	Output Capacitance	V_{CE}=25V	-	145	-	pF
C_{res}	Reverse Transfer Capacitance	f=1.0MHz	-	35	-	pF
Rthj-c	Thermal Resistance Junction-Case		-	-	6	℃/W

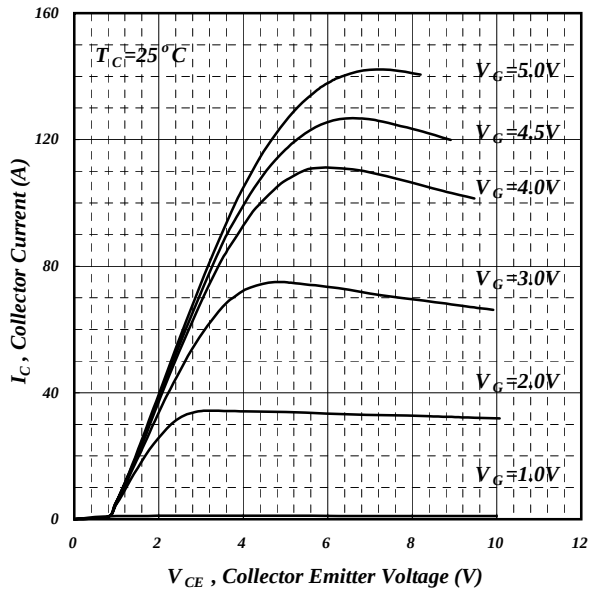


Fig 1. Typical Output Characteristics

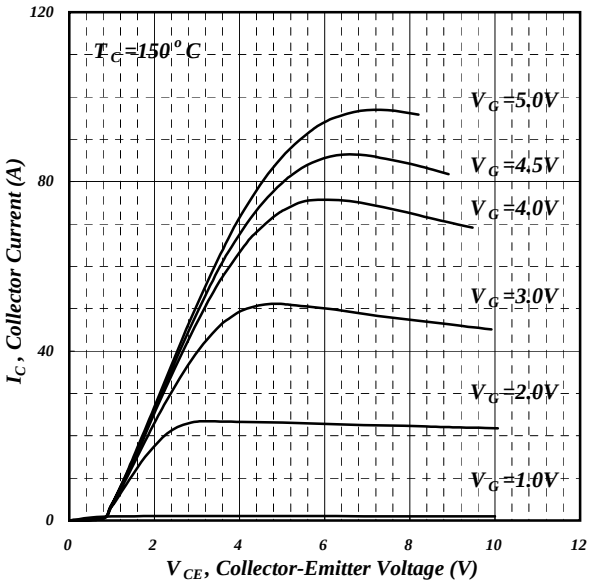


Fig 2. Typical Output Characteristics

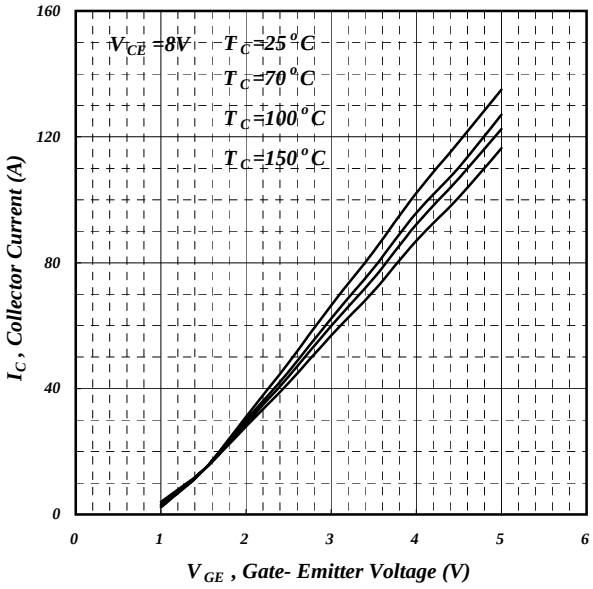


Fig 3. Collector Current v.s. Gate-Emitter Voltage

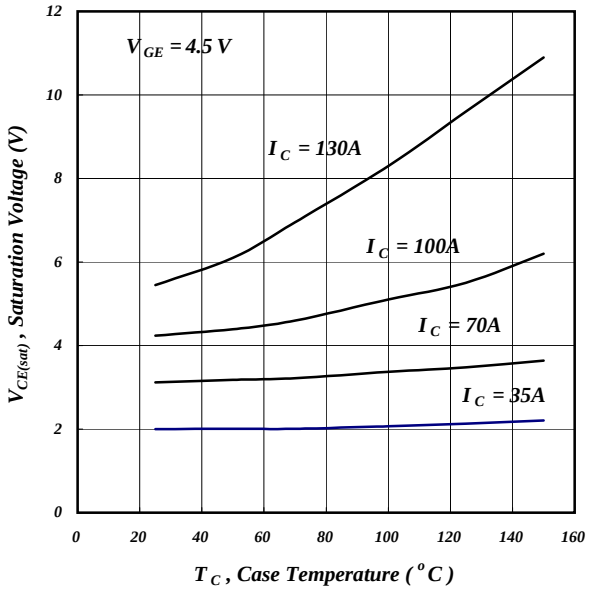


Fig 4. Collector- Emitter Saturation Voltage v.s. Case Temperature

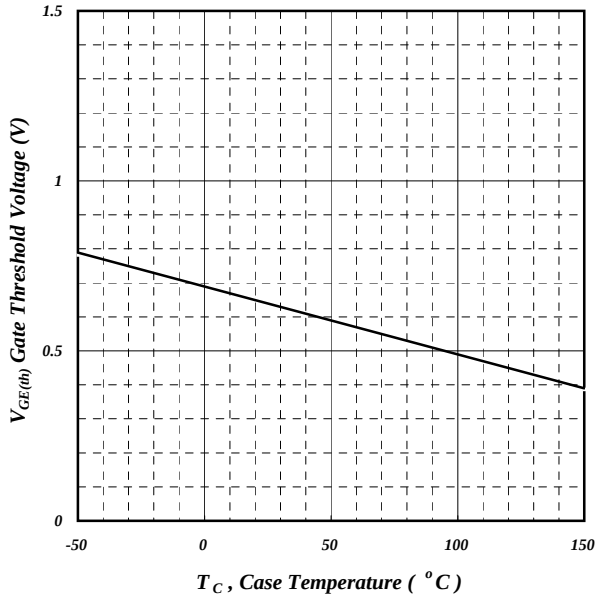


Fig 5. Gate-Emitter Cut-Off Voltage v.s. Case Temperature

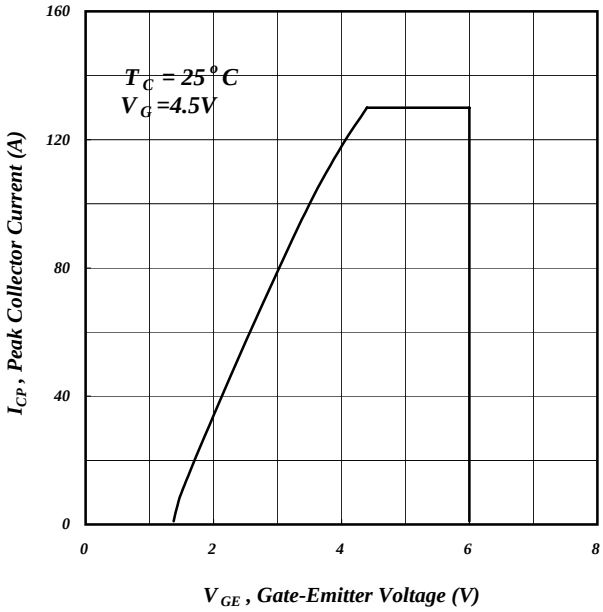


Fig 6. Safe Operation Area

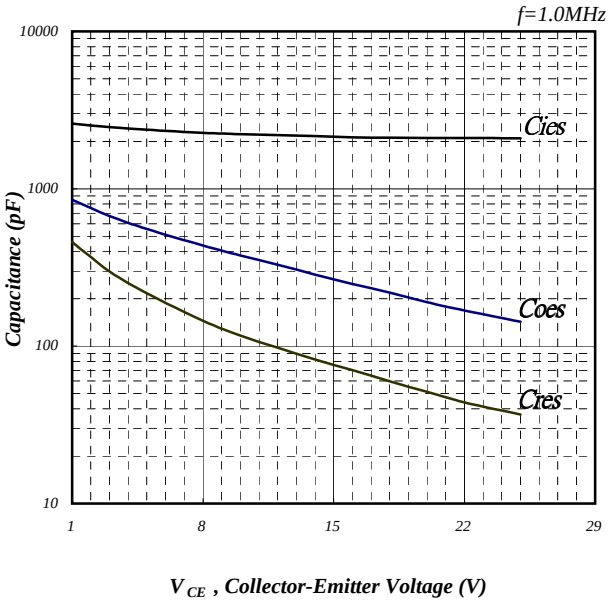


Fig 7. Collector v.s. Collector-Emitter Voltage

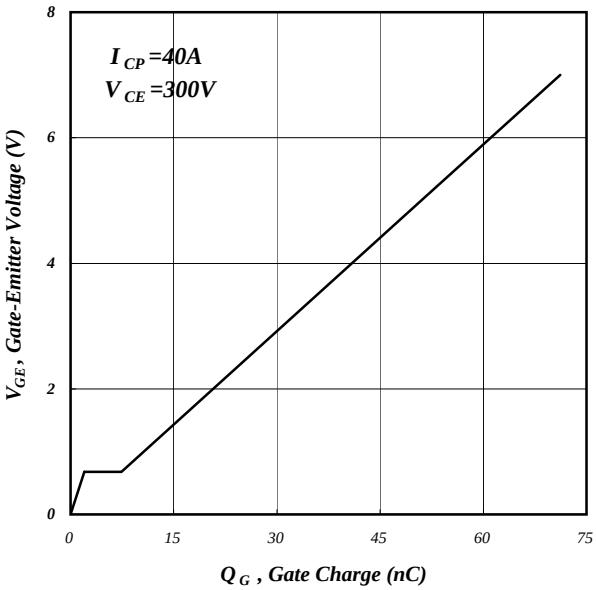


Fig 8. Gate Charge Waveform

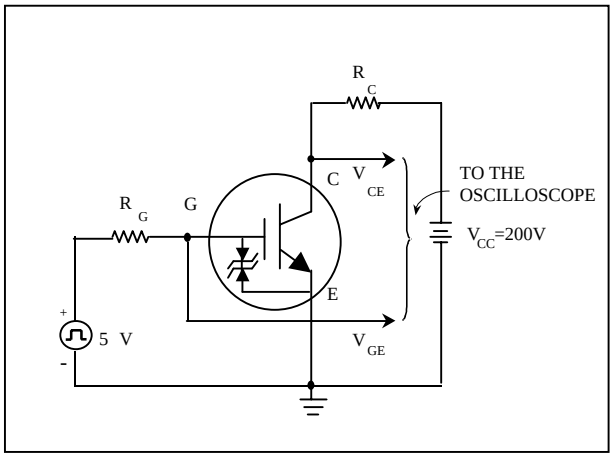


Fig 9. Switching Time Test Circuit

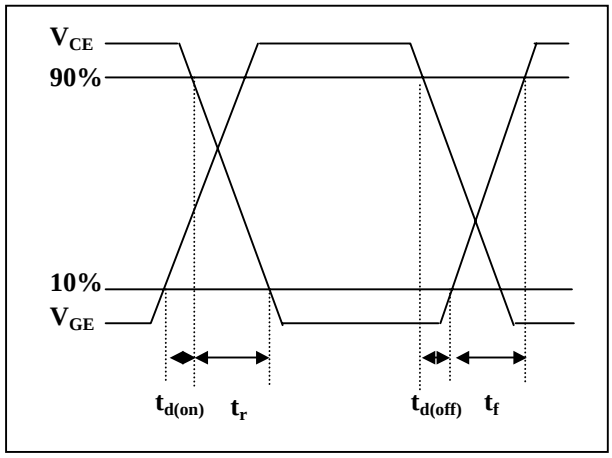


Fig 10. Switching Time Waveform

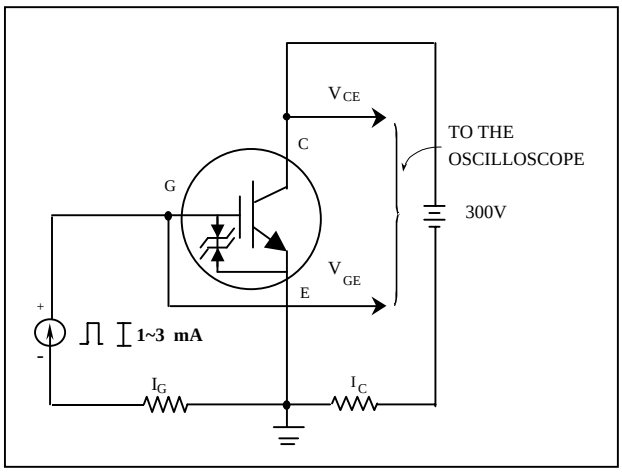


Fig 11. Gate Charge Test Circuit

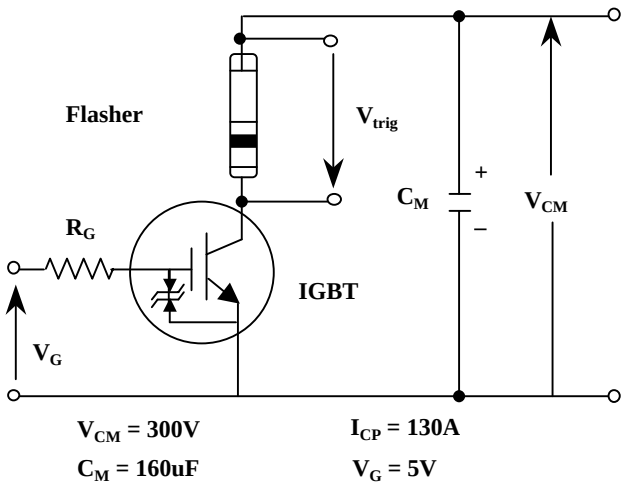


Fig 12. Application Test Circuit