

# AP28G45EM

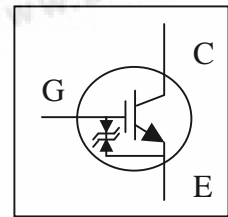
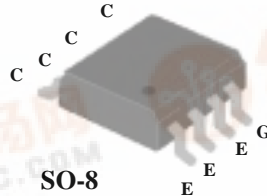


**Advanced Power Electronics Corp.**

*N-CHANNEL INSULATED GATE  
BIPOLAR TRANSISTOR*

- ▼ High Input Impedance
- ▼ High Pick Current Capability
- ▼ 3.3V Gate Drive
- ▼ Strobe Flash Applications

$V_{CE}$	450V
$I_{CP}$	130A



## Absolute Maximum Ratings

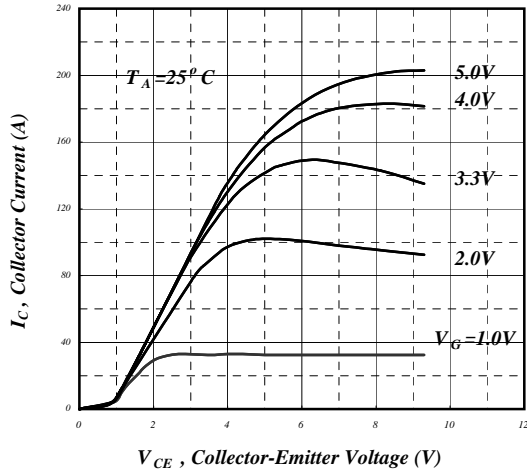
Symbol	Parameter	Rating	Units
$V_{CE}$	Collector-Emitter Voltage	450	V
$V_{GE}$	Gate-Emitter Voltage	$\pm 6$	V
$I_{GEP}$	Pulsed Gate-Emitter Voltage	$\pm 8$	V
$I_{CP}$	Pulsed Collector Current, $V_{GE}$ @ 3.3V	130	A
$P_D @ T_C=25^\circ C^1$	Maximum Power Dissipation	2.5	W
$T_{STG}$	Storage Temperature Range	-55 to 150	$^\circ C$
$T_J$	Operating Junction Temperature Range	-55 to 150	$^\circ C$

## Electrical Characteristics @ $T_J=25^\circ C$ (unless otherwise specified)

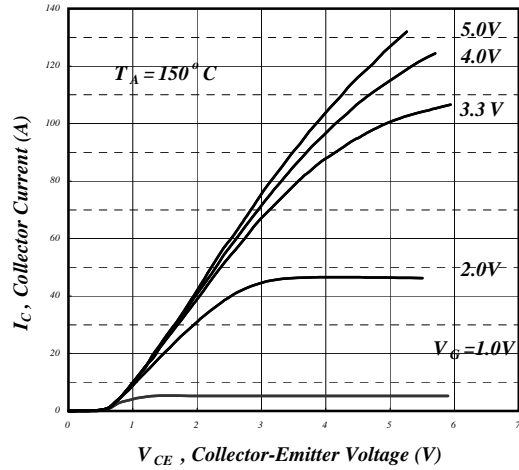
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
$I_{GES}$	Gate-Emitter Leakage Current	$V_{GE}=\pm 6V, V_{CE}=0V$	-	-	10	$\mu A$
$I_{CES}$	Collector-Emitter Leakage Current	$V_{CE}=450V, V_{GE}=0V$	-	-	10	$\mu A$
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$V_{GE}=3.3V, I_{CP}=130A$ (Pulsed)	-	3.8	6	V
$V_{GE(th)}$	Gate Threshold Voltage	$V_{CE}=V_{GE}, I_C=250\mu A$	-	-	1	V
$Q_g$	Total Gate Charge	$I_C=40A$	-	74	120	nC
$Q_{ge}$	Gate-Emitter Charge	$V_{CE}=360V$	-	8	-	nC
$Q_{gc}$	Gate-Collector Charge	$V_{GE}=4.5V$	-	34	-	nC
$t_{d(on)}$	Turn-on Delay Time	$V_{CC}=200V$	-	20	-	ns
$t_r$	Rise Time	$I_C=15A$	-	100	-	ns
$t_{d(off)}$	Turn-off Delay Time	$R_G=10\Omega$	-	400	-	ns
$t_f$	Fall Time	$V_{GE}=5V$	-	3	-	$\mu s$
$C_{ies}$	Input Capacitance	$V_{GE}=0V$	-	3020	4830	pF
$C_{oes}$	Output Capacitance	$V_{CE}=25V$	-	220	-	pF
$C_{res}$	Reverse Transfer Capacitance	$f=1.0MHz$	-	50	-	pF
$R_{thJA}^1$	Thermal Resistance Junction-Ambient		-	-	50	$^\circ C/W$

### Notes:

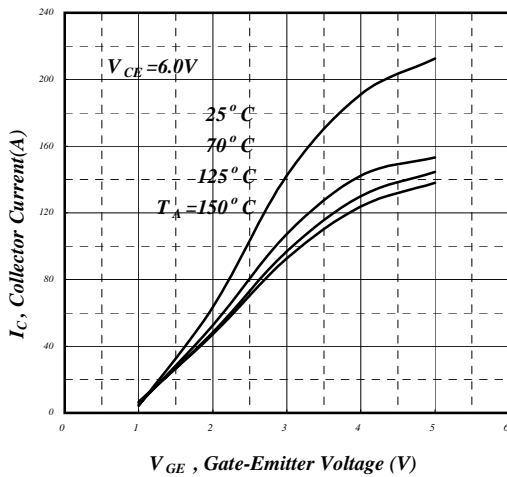
1. Surface mounted on 1 in<sup>2</sup> copper pad of FR4 board ; 125 $^\circ C/W$  when mounted on Min. copper pad.



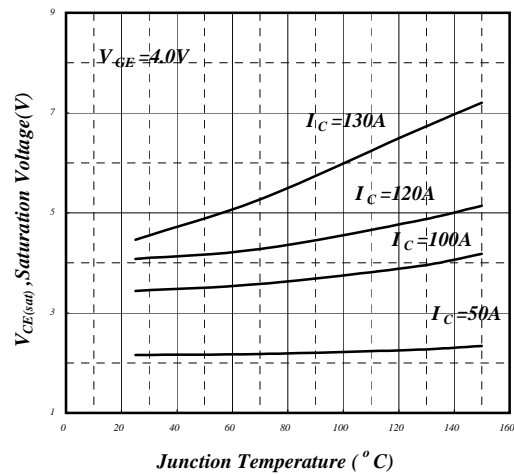
**Fig 1. Typical Output Characteristics**



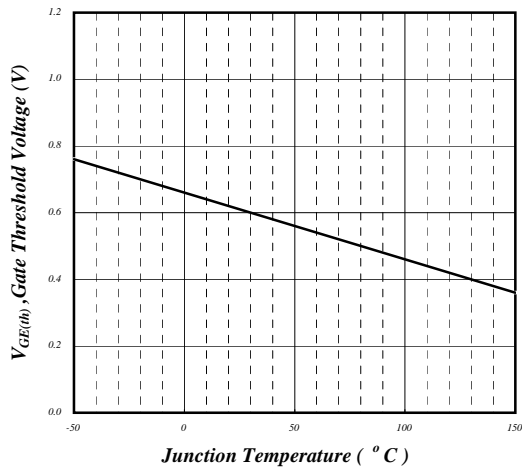
**Fig 2. Typical Output Characteristics**



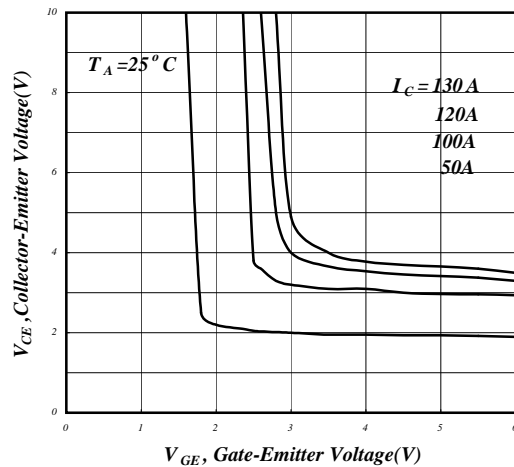
**Fig 3. Collector Current v.s. Gate-Emitter Voltage**



**Fig 4. Collector-Emmitter Saturation Voltage v.s. Junction Temperature**



**Fig 5. Gate Threshold Voltage v.s. Junction Temperature**



**Fig 6. Collector Current v.s. Gate-Emitter Voltage**

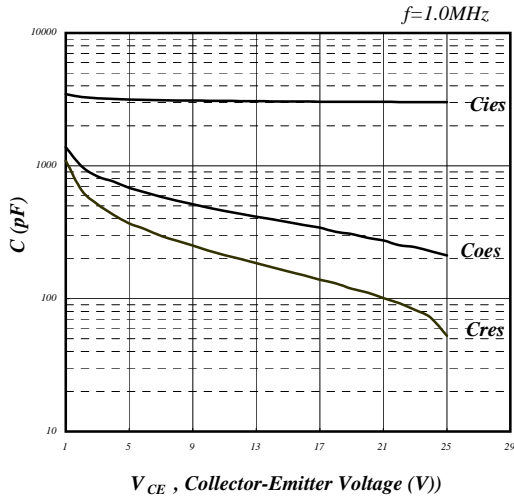


Fig 7. Typical Capacitance Characteristics

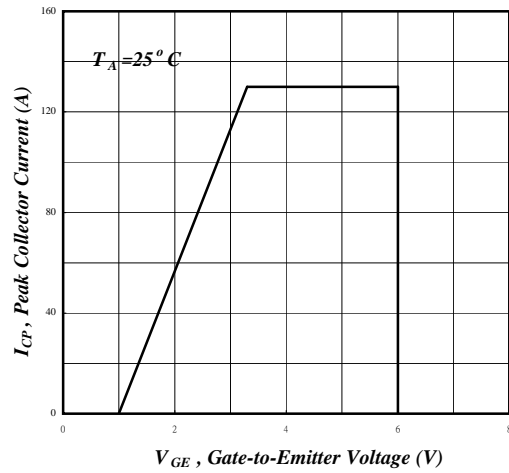


Fig 8. Maximum Pulse Collector Current

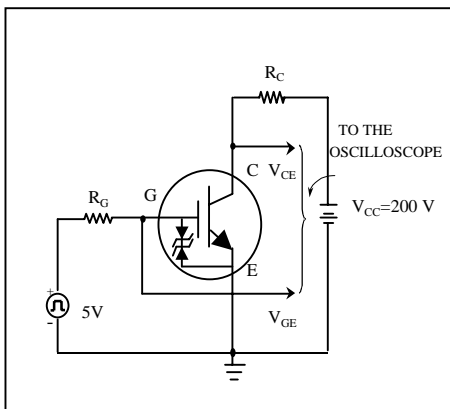


Fig 9. Switching Time Test Circuit

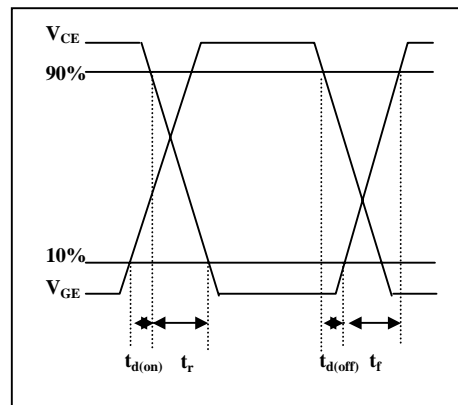


Fig 10. Switching Time Waveform

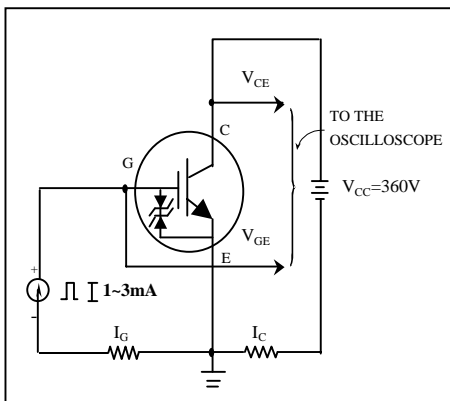


Fig 11. Gate Charge Test Circuit

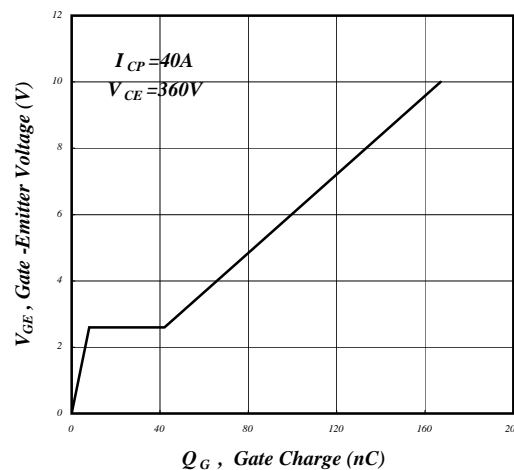


Fig 12. Gate Charge Waveform