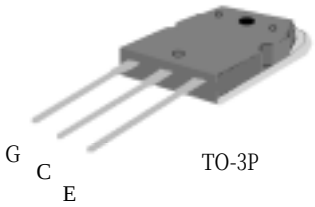
Advanced Power Electronics Corp.

N-CHANNEL INSULATED GATE BIPOLAR TRANSISTOR

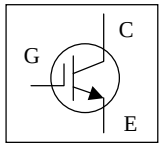
Features

- ▼ High speed switching
- ▼ Low Saturation Voltage
  $V_{CE(sat)}$=3.0V@I_C=30A
- ▼ Industry Standard TO-3P Package
- ▼ RoHS Compliant



TO-3P

V_{CES}	1200V
I_C	30A



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{CES}	Collector-Emitter Voltage	1200	V
V_{GE}	Gate-Emitter Voltage	±30	V
I_C@T_C=25℃	Continuous Collector Current	60	A
I_C@T_C=100℃	Continuous Collector Current	30	A
I_{CM}	Pulsed Collector Current[1]	160	A
P_D@T_C=25℃	Maximum Power Dissipation	208	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃
T_L	Maximum Lead Temp. for Soldering Purposes , 1/8" from case for 5 seconds .	300	℃

Notes:

1.Repetitive rating : Pulse width limited by max . junction temperature .

Thermal Data

Symbol	Parameter	Value	Units
Rthj-c	Thermal Resistance Junction-Case	0.6	℃/W
Rthj-a	Thermal Resistance Junction-Ambient	40	℃/W

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV_{CES}	Collect-to-Emitter Breakdown Voltage	V_{GE}=0V, I_C=250uA	1200	-	-	V
I_{GES}	Gate-to-Emitter Leakage Current	V_{GE}=±30V, V_{CE}=0V	-	-	±500	nA
I_{CES}	Collector-Emitter Leakage Current	V_{CE}=1200V, V_{GE}=0V	-	-	1	mA
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	V_{GE}=15V, I_C=30A	-	3	3.6	V
		V_{GE}=15V, I_C=60A	-	3.8	-	V
$V_{GE(th)}$	Gate Threshold Voltage	V_{CE}=V_{GE}, I_C=1mA	3	4.4	7	V
Q_g	Total Gate Charge	I_C=30A	-	55	88	nC
Q_{ge}	Gate-Emitter Charge	V_{CC}=500V	-	12	-	nC
Q_{gc}	Gate-Collector Charge	V_{GE}=15V	-	27	-	nC
$t_{d(on)}$	Turn-on Delay Time	V_{CC}=600V,	-	20	-	ns
t_r	Rise Time	I_c=30A,	-	20	-	ns
$t_{d(off)}$	Turn-off Delay Time	V_{GE}=15V,	-	65	-	ns
t_f	Fall Time	R_G=5Ω,	-	200	300	ns
E_{on}	Turn-On Switching Loss	Inductive Load	-	1.8	-	mJ
E_{off}	Turn-Off Switching Loss		-	1.1	-	mJ
C_{ies}	Input Capacitance	V_{GE}=0V	-	1320	2110	pF
C_{oes}	Output Capacitance	V_{CE}=30V	-	105	-	pF
C_{res}	Reverse Transfer Capacitance	f=1.0MHz	-	9	-	pF

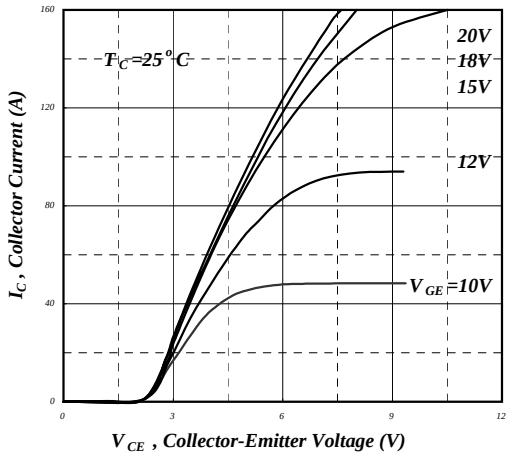


Fig 1. Typical Output Characteristics

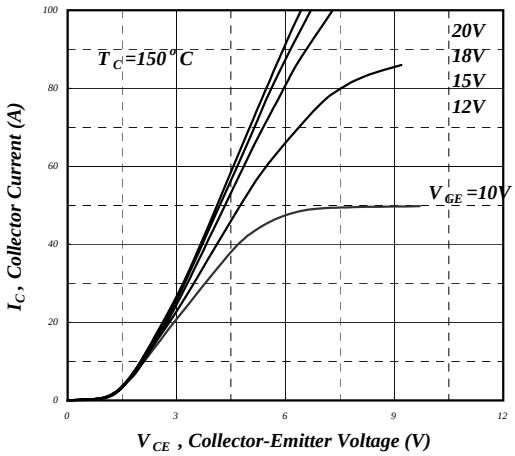


Fig 2. Typical Output Characteristics

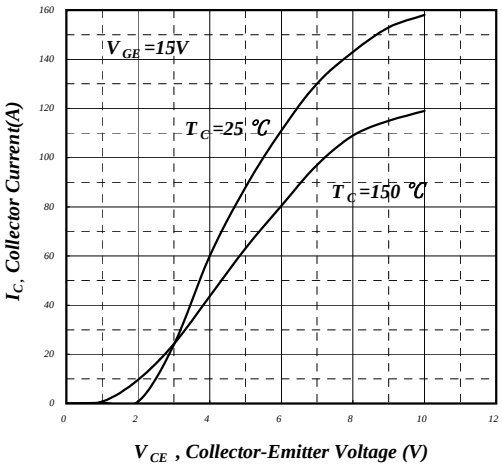


Fig 3. Typical Saturation Voltage Characteristics

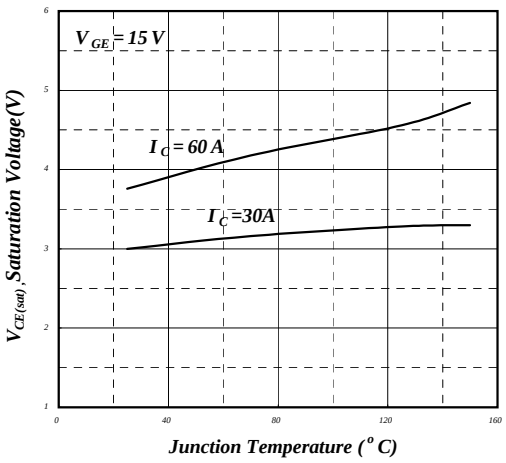


Fig 4. Typical Collector- Emitter Voltage v.s. Junction Temperature

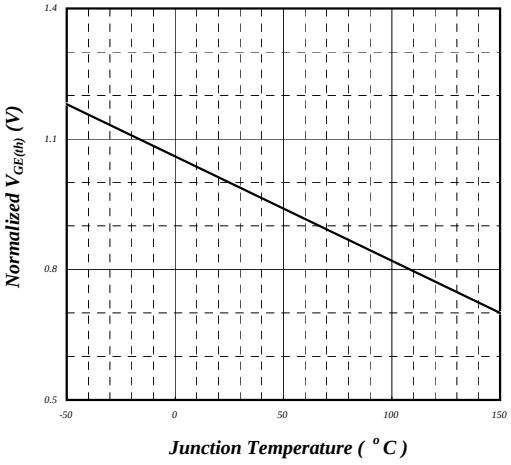


Fig 5. Gate Threshold Voltage v.s. Junction Temperature

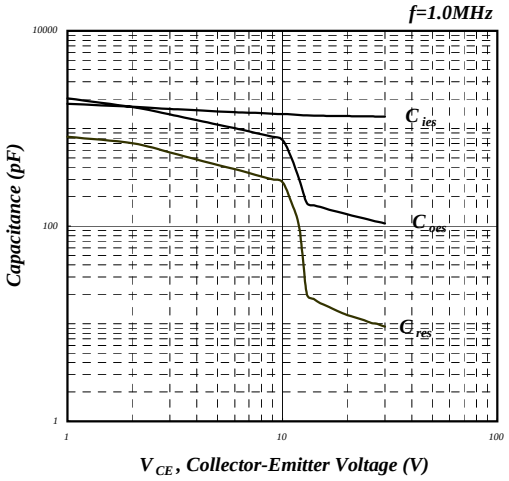


Fig 6. Typical Capacitance Characterisitics

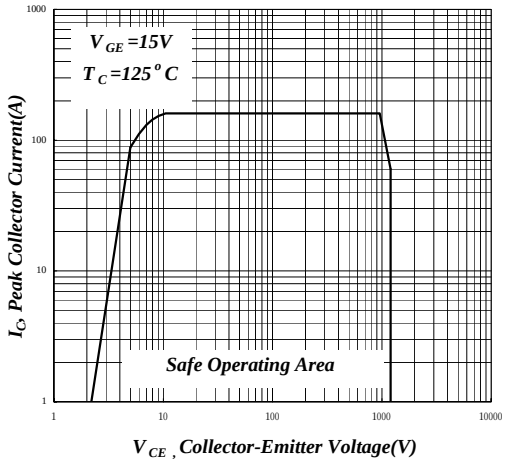


Fig 7. Turn-off SOA

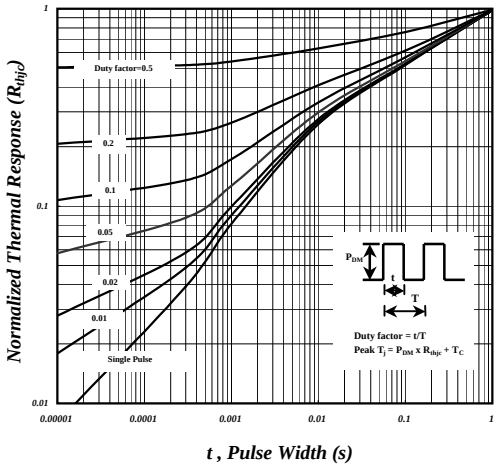


Fig 8. Effective Transient Thermal Impedance

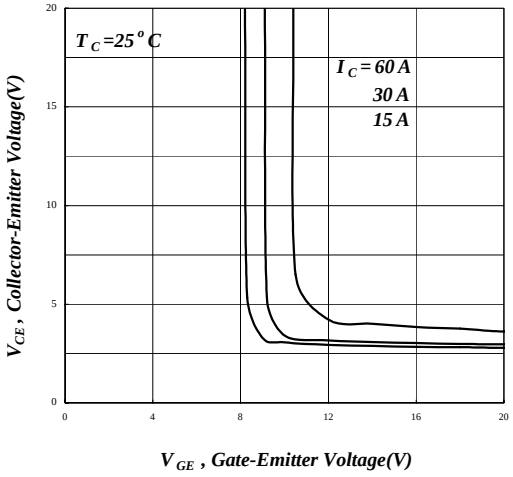


Fig 9. Saturation Voltage vs. V_{GE}

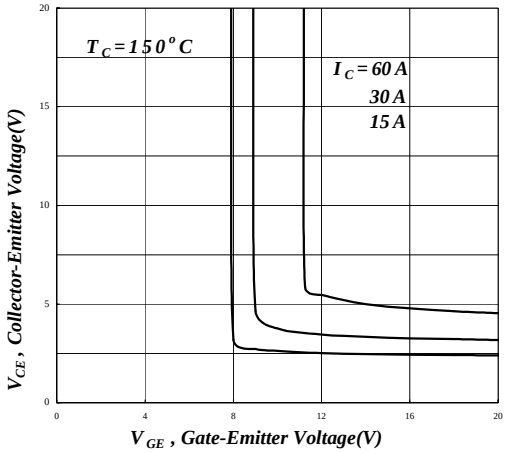


Fig 10. Saturation Voltage vs. V_{GE}

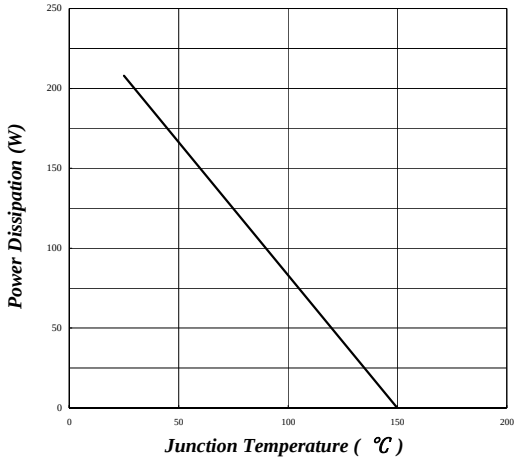


Fig11. Power Dissipation vs. Junction Temperature

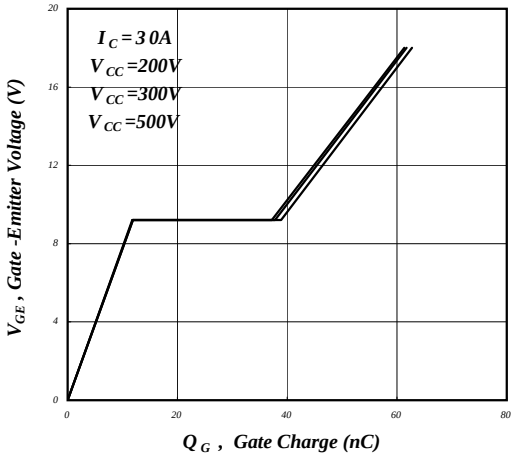


Fig 12. Gate Charge Characterisitics