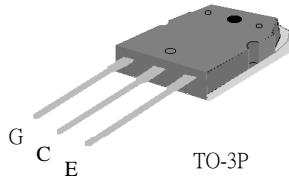


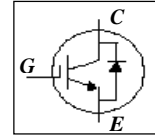


**Features**

- ▼ High Speed Switching
- ▼ Low Saturation Voltage  
 $V_{CE(sat)}=2.9V@I_C=30A$
- ▼ CO-PAK, IGBT With FRD
- ▼ RoHS Compliant



$V_{CES}$	1200V
$I_C$	30A



**Absolute Maximum Ratings**

Symbol	Parameter	Rating	Units
$V_{CES}$	Collector-Emitter Voltage	1200	V
$V_{GE}$	Gate-Emitter Voltage	$\pm 30$	V
$I_C@T_C=25^\circ C$	Continuous Collector Current	60	A
$I_C@T_C=100^\circ C$	Continuous Collector Current	30	A
$I_{CM}$	Pulsed Collector Current <sup>1</sup>	120	A
$I_F@T_C=100^\circ C$	Diode Continuous Forward Current	6	A
$I_{FM}$	Diode Pulse Forward Current	40	A
$P_D@T_C=25^\circ C$	Maximum Power Dissipation	208	W
$T_{STG}$	Storage Temperature Range	-55 to 150	$^\circ C$
$T_J$	Operating Junction Temperature Range	-55 to 150	$^\circ C$
$T_L$	Maximum Lead Temp. for Soldering Purposes , 1/8" from case for 5 seconds .	300	$^\circ C$

**Notes:**

1.Pulse width limited by max . junction temperature .

**Thermal Data**

Symbol	Parameter	Value	Units
Rthj-c(IGBT)	Thermal Resistance Junction-Case	0.6	$^\circ C/W$
Rthj-c(Diode)	Thermal Resistance Junction-Case	2	$^\circ C/W$
Rthj-a	Thermal Resistance Junction-Ambient	40	$^\circ C/W$

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
$I_{GES}$	Gate-to-Emitter Leakage Current	$V_{GE}=\pm 30V, V_{CE}=0V$	-	-	+500	nA
$I_{CES}$	Collector-Emitter Leakage Current	$V_{CE}=1200V, V_{GE}=0V$	-	-	1	mA
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$V_{GE}=15V, I_C=30A$	-	2.9	3.6	V
		$V_{GE}=15V, I_C=60A$	-	3.7	-	V
$V_{GE(th)}$	Gate Threshold Voltage	$V_{CE}=V_{GE}, I_C=250\mu A$	3	-	7	V
$Q_g$	Total Gate Charge	$I_C=30A$	-	63	100	nC
$Q_{ge}$	Gate-Emitter Charge	$V_{CC}=500V$	-	12	-	nC
$Q_{gc}$	Gate-Collector Charge	$V_{GE}=15V$	-	32	-	nC
$t_{d(on)}$	Turn-on Delay Time	$V_{CC}=600V,$ $I_C=30A,$	-	40	-	ns
$t_r$	Rise Time	$V_{GE}=15V,$ $R_G=5\Omega,$	-	45	-	ns
$t_{d(off)}$	Turn-off Delay Time	Inductive Load	-	125	-	ns
$t_f$	Fall Time		-	430	860	ns
$E_{on}$	Turn-On Switching Loss		-	1.3	-	mJ
$E_{off}$	Turn-Off Switching Loss	-	3.1	-	mJ	
$C_{ies}$	Input Capacitance	$V_{GE}=0V$	-	1400	2240	pF
$C_{oes}$	Output Capacitance	$V_{CE}=30V$	-	120	-	pF
$C_{res}$	Reverse Transfer Capacitance	$f=1.0MHz$	-	15	-	pF

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

$V_F$	Forward Voltage	$I_F=6A$	-	2.6	3	V
$V_F$	Forward Voltage	$I_F=20A$	-	-	4	V
$t_{rr}$	Reverse Recovery Time	$I_F=10A$	-	54	-	ns
$Q_{rr}$	Reverse Recovery Charge	$di/dt = 100 A/\mu s$	-	138	-	nC

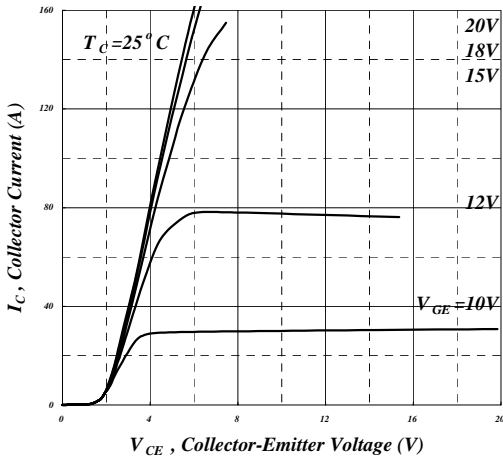


Fig 1. Typical Output Characteristics

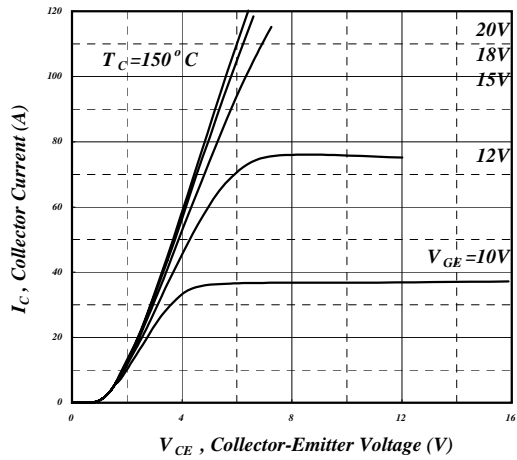


Fig 2. Typical Output Characteristics

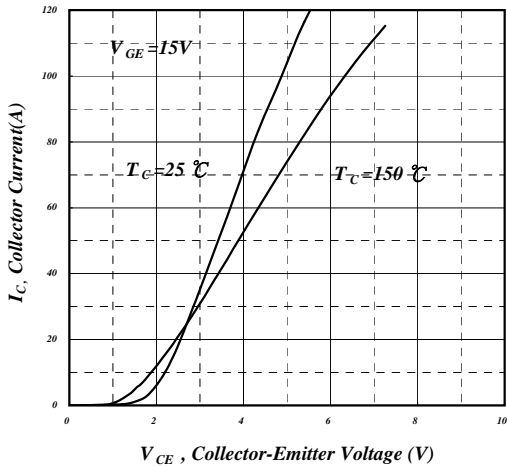


Fig 3. Typical Saturation Voltage Characteristics

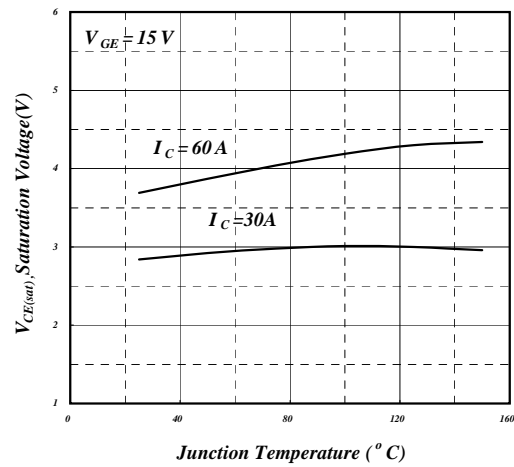


Fig 4. Typical Collector- Emitter Voltage v.s. Junction Temperature

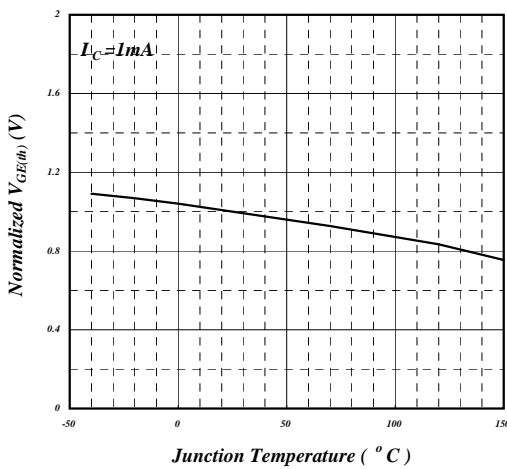


Fig 5. Gate Threshold Voltage v.s. Junction Temperature

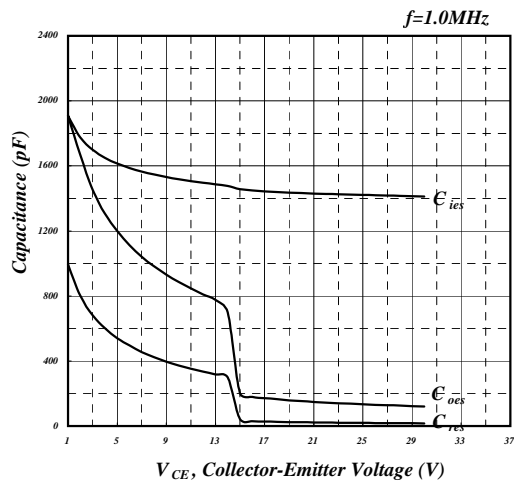


Fig 6. Typical Capacitance Characteristics

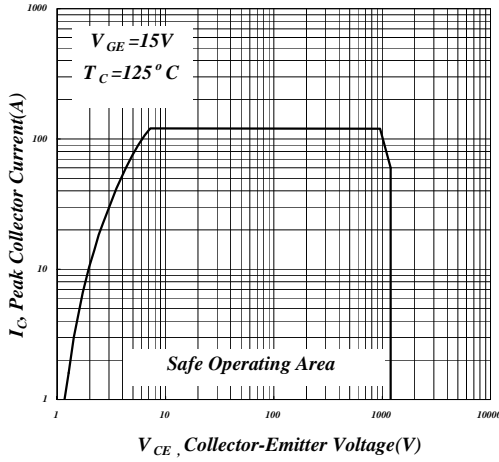


Fig 7. Turn-off SOA

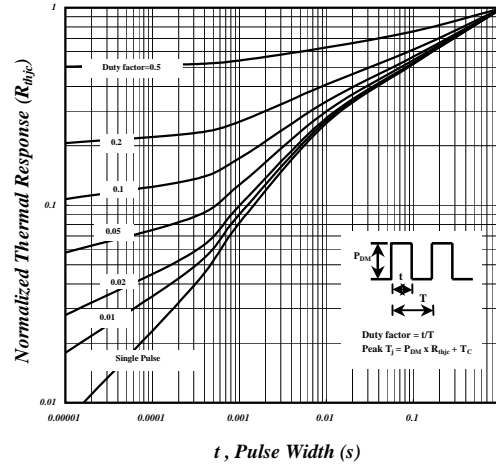


Fig 8. Effective Transient Thermal Impedance

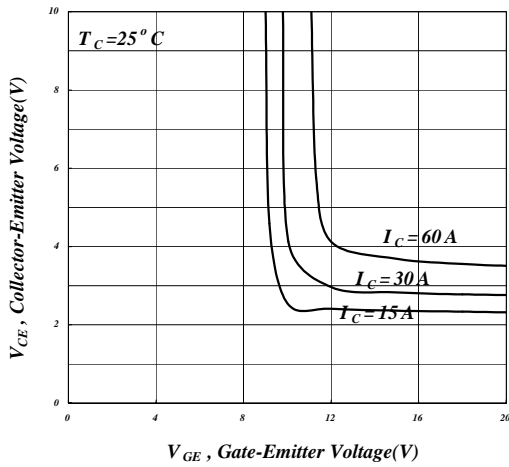


Fig 9. Saturation Voltage vs.  $V_{GE}$

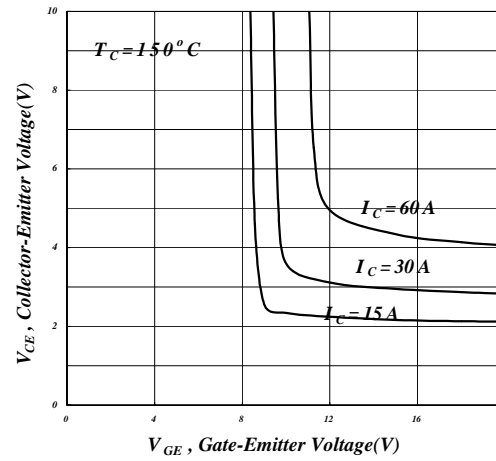


Fig 10. Saturation Voltage vs.  $V_{GE}$

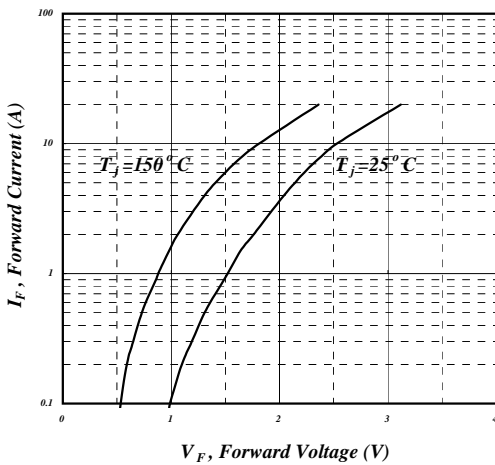


Fig11. Forward Characteristic of Diode

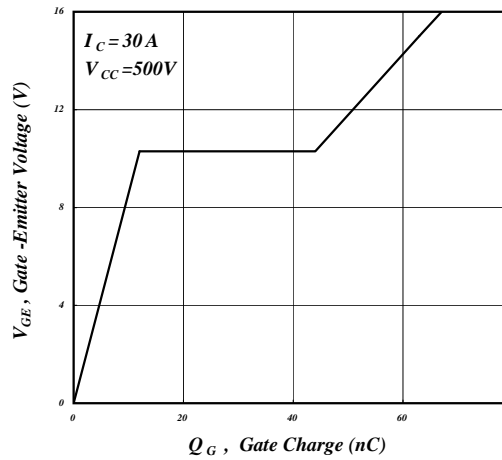
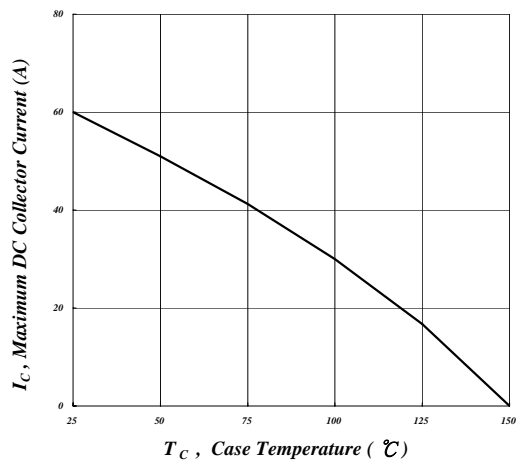


Fig 12. Gate Charge Characteristics



**Fig 13. Maximum Collector Current VS.  
Case Temperature**