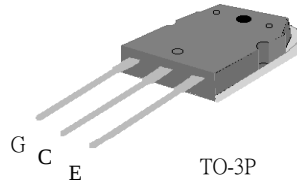


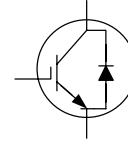


Features

- ▼ High Speed Switching
- ▼ NPT Technology
- ▼ RoHS Compliant & Halogen-Free



V_{CES}	1200V
I_C	10.5A



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{CES}	Collector-Emitter Voltage	1200	V
V_{GE}	Gate-Emitter Voltage	± 30	V
$I_C @ T_C = 25^\circ\text{C}$	Collector Current	21	A
$I_C @ T_C = 100^\circ\text{C}$	Collector Current	10.5	A
I_{CM}	Pulsed Collector Current ¹	42	A
$I_F @ T_C = 100^\circ\text{C}$	Diode Forward Current	8	A
I_{FM}	Diode Pulse Forward Current	40	A
$P_D @ T_C = 25^\circ\text{C}$	Maximum Power Dissipation	125	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$
T_L	Maximum Lead Temp. for Soldering Purposes , 1/8" from case for 5 seconds .	300	$^\circ\text{C}$

Notes:

1. Pulse width limited by max . junction temperature .

Thermal Data

Symbol	Parameter	Value	Units
Rthj-c(IGBT)	Thermal Resistance Junction-Case	1	$^\circ\text{C}/\text{W}$
Rthj-c(Diode)	Thermal Resistance Junction-Case	2	$^\circ\text{C}/\text{W}$
Rthj-a	Thermal Resistance Junction-Ambient	40	$^\circ\text{C}/\text{W}$

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
I_{GES}	Gate-to-Emitter Leakage Current	$V_{GE} = \pm 30\text{V}$, $V_{CE} = 0\text{V}$	-	-	± 500	nA
I_{CES}	Collector-Emitter Leakage Current	$V_{CE} = 1200\text{V}$, $V_{GE} = 0\text{V}$	-	-	1	mA
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$V_{GE} = 15\text{V}$, $I_C = 5\text{A}$	-	2	2.7	V
		$V_{GE} = 15\text{V}$, $I_C = 10\text{A}$	-	2.5	-	V
$V_{GE(th)}$	Gate Threshold Voltage	$V_{CE} = V_{GE}$, $I_C = 10\text{mA}$	3.5	-	8	V
Q_g	Total Gate Charge	$I_C = 5\text{A}$	-	33	53	nC
Q_{ge}	Gate-Emitter Charge	$V_{CC} = 600\text{V}$	-	6.5	-	nC
Q_{gc}	Gate-Collector Charge	$V_{GE} = 15\text{V}$	-	16.5	-	nC
$t_{d(on)}$	Turn-on Delay Time	$V_{CC} = 960\text{V}$,	-	8	-	ns
t_r	Rise Time	$I_C = 5\text{A}$,	-	20	-	ns
$t_{d(off)}$	Turn-off Delay Time	$V_{GE} = 15\text{V}$,	-	50	-	ns
t_f	Fall Time	$R_G = 22\Omega$,	-	400	800	ns
		Inductive Load	-	-	-	-
E_{on}	Turn-On Switching Loss		-	0.7	-	mJ
E_{off}	Turn-Off Switching Loss		-	1.1	-	mJ
C_{ies}	Input Capacitance	$V_{GE} = 0\text{V}$	-	690	1100	pF
C_{oes}	Output Capacitance	$V_{CE} = 30\text{V}$	-	65	-	pF
C_{res}	Reverse Transfer Capacitance	$f = 1.0\text{MHz}$	-	9	-	pF

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_F	Forward Voltage	$I_F = 8\text{A}$	-	2.5	3.2	V
t_{rr}	Reverse Recovery Time	$I_F = 8\text{A}$	-	70	-	ns
Q_{rr}	Reverse Recovery Charge	$di/dt = 100\text{ A}/\mu\text{s}$	-	170	-	nC

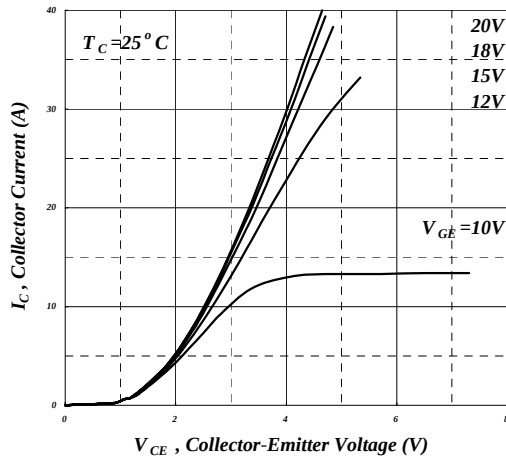


Fig 1. Typical Output Characteristics

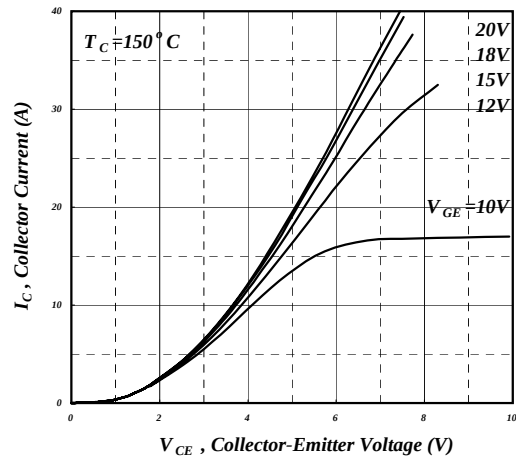


Fig 2. Typical Output Characteristics

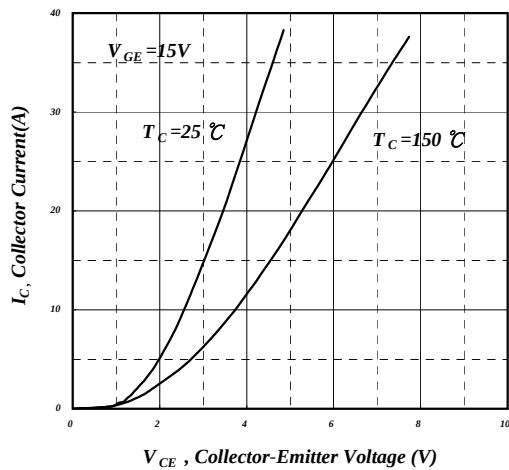


Fig 3. Typical Saturation Voltage Characteristics

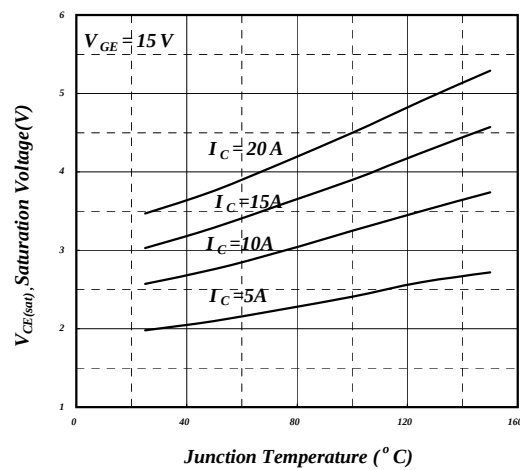


Fig 4. Typical Collector- Emitter Voltage v.s. Junction Temperature

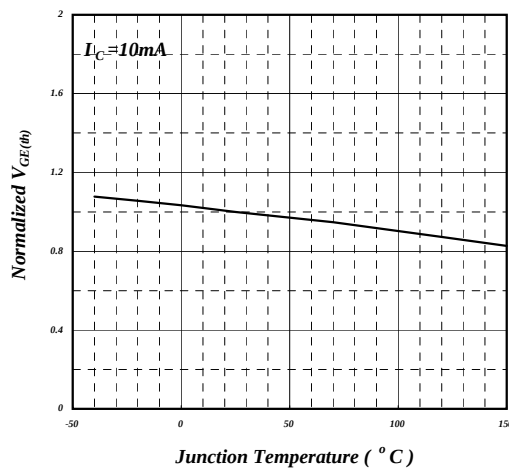


Fig 5. Gate Threshold Voltage v.s. Junction Temperature

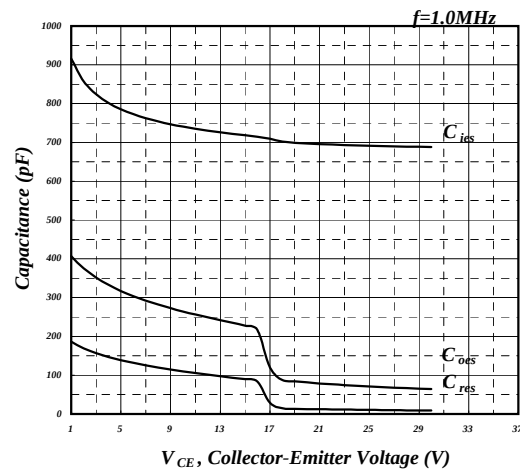


Fig 6. Typical Capacitance Characteristics

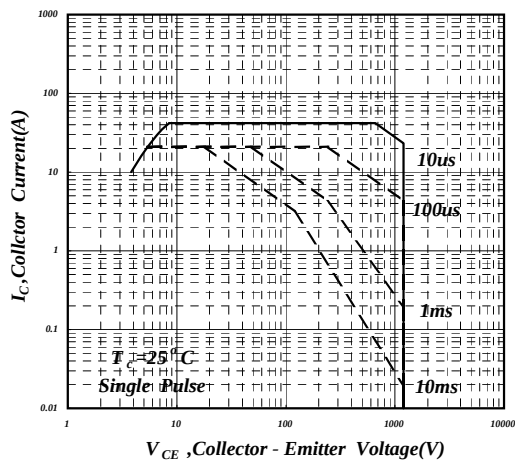


Fig 7. SOA Characteristics

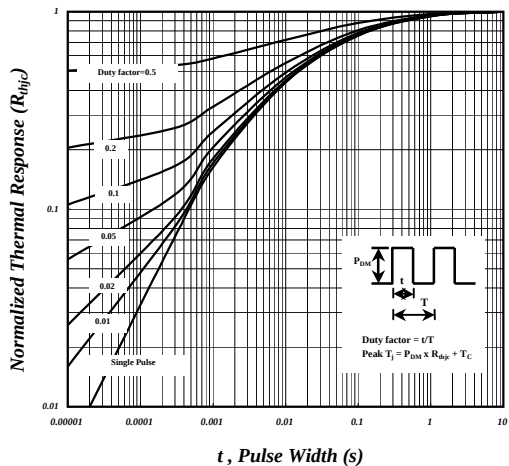


Fig 8. Effective Transient Thermal Impedance

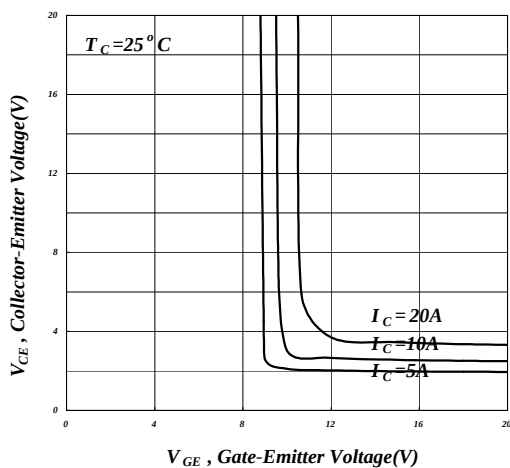


Fig 9. Saturation Voltage vs. V_{GE}

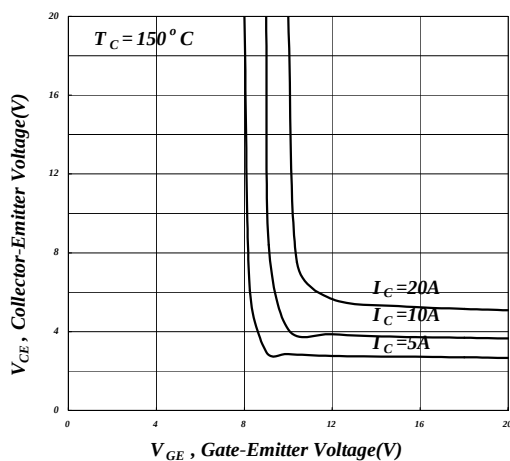


Fig 10. Saturation Voltage vs. V_{GE}

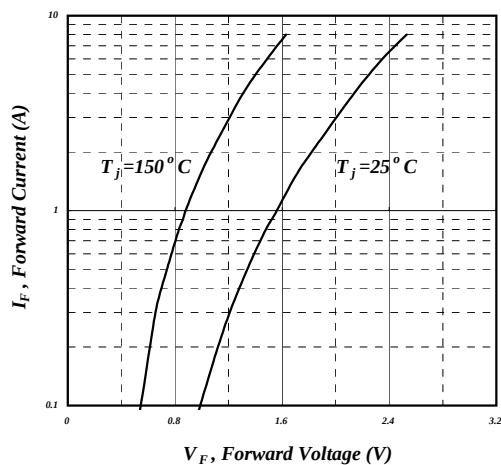


Fig11. Forward Characteristic of Diode

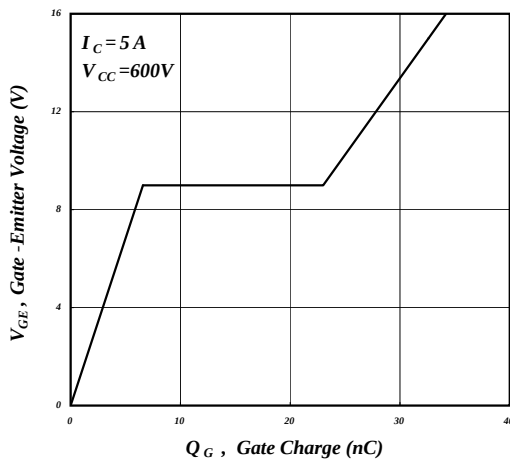


Fig 12. Gate Charge Characteristics