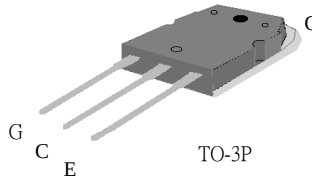


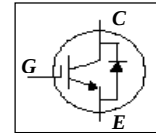


Features

- ▼ **High Speed Switching**
- ▼ **Low Saturation Voltage**
 $V_{CE(sat), Typ.} = 2.6V @ I_C = 33A$
- ▼ **Built-in Fast Recovery Diode**



V_{CES}	600V
I_C	45A



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{CES}	Collector-Emitter Voltage	600	V
V_{GE}	Gate-Emitter Voltage	± 30	V
$I_C @ T_C = 25^\circ C$	Collector Current	75	A
$I_C @ T_C = 100^\circ C$	Collector Current	45	A
I_{CM}	Pulsed Collector Current	150	A
$I_F @ T_C = 25^\circ C$	Diode Forward Current	40	A
$I_F @ T_C = 100^\circ C$	Diode Forward Current	15	A
$P_D @ T_C = 25^\circ C$	Maximum Power Dissipation	300	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ C$
T_J	Operating Junction Temperature Range	150	$^\circ C$
T_L	Maximum Lead Temp. for Soldering Purposes , 1/8" from case for 5 seconds .	300	$^\circ C$

Notes:

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

Thermal Data

Symbol	Parameter	Value	Units
Rthj-c	Thermal Resistance Junction-Case	0.42	$^\circ C/W$
Rthj-c(Diode)	Thermal Resistance Junction-Case	1.5	$^\circ C/W$
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
V_{CES}	Collect-to-Emitter Breakdown Voltage	$V_{GE} = 0V, I_C = 500\mu A$	600	-	-	V
I_{GES}	Gate-to-Emitter Leakage Current	$V_{GE} = \pm 30V, V_{CE} = 0V$	-	-	± 100	nA
I_{CES}	Collector-Emitter Leakage Current	$V_{CE} = 600V, V_{GE} = 0V$	-	-	500	μA
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$V_{GE} = 15V, I_C = 33A$	-	2.6	3	V
		$V_{GE} = 15V, I_C = 50A$	-	3.1	3.5	V
$V_{GE(th)}$	Gate Threshold Voltage	$V_{CE} = V_{GE}, I_C = 250\mu A$	2	-	6	V
Q_g	Total Gate Charge	$I_C = 33A$	-	55	100	nC
Q_{ge}	Gate-Emitter Charge	$V_{CE} = 400V$	-	12	-	nC
Q_{gc}	Gate-Collector Charge	$V_{GE} = 15V$	-	27	-	nC
$t_{d(on)}$	Turn-on Delay Time	$V_{CE} = 390V, I_C = 33A,$	-	27	-	ns
t_r	Rise Time	$V_{GE} = 15V, R_G = 5\Omega,$	-	22	-	ns
$t_{d(off)}$	Turn-off Delay Time	$V_{GE} = 15V, R_G = 5\Omega,$	-	110	-	ns
t_f	Fall Time	Inductive Load	-	100	260	ns
E_{on}	Turn-On Switching Loss		-	0.7	-	mJ
E_{off}	Turn-Off Switching Loss		-	1.2	-	mJ
C_{ies}	Input Capacitance	$V_{GE} = 0V$	-	1250	2000	pF
C_{oes}	Output Capacitance	$V_{CE} = 30V$	-	235	-	pF
C_{res}	Reverse Transfer Capacitance	$f = 1.0MHz$	-	7	-	pF
V_F	FRD Forward Voltage	$I_F = 15A$	-	1.3	1.7	V
t_{rr}	FRD Reverse Recovery Time	$I_F = 15A$	-	65	-	ns
Q_{rr}	FRD Reverse Recovery Charge	$di/dt = 200 A/\mu s$	-	230	-	nC

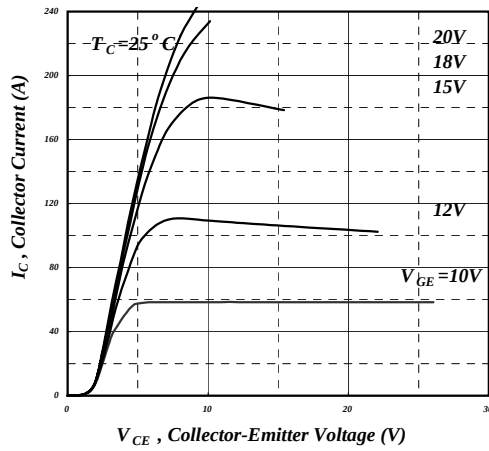


Fig 1. Typical Output Characteristics

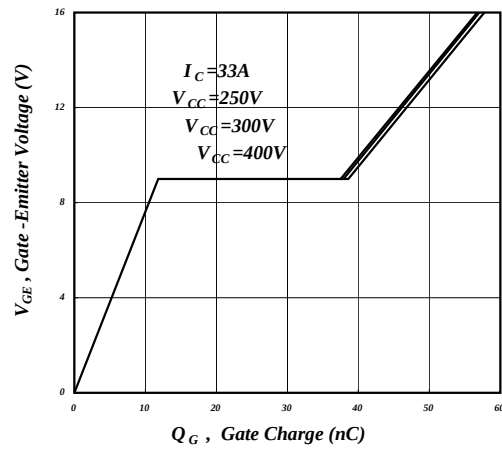


Fig 2. Gate Charge Characteristics

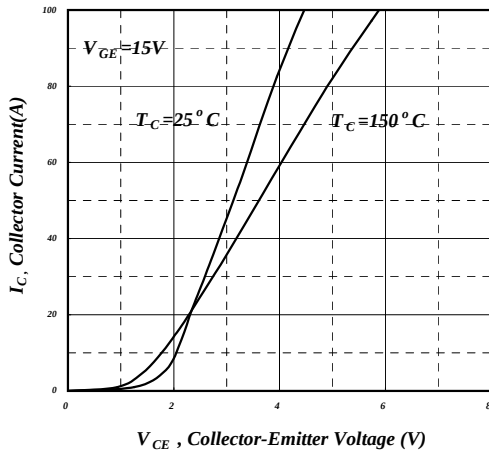


Fig 3. Typical Saturation Voltage Characteristics

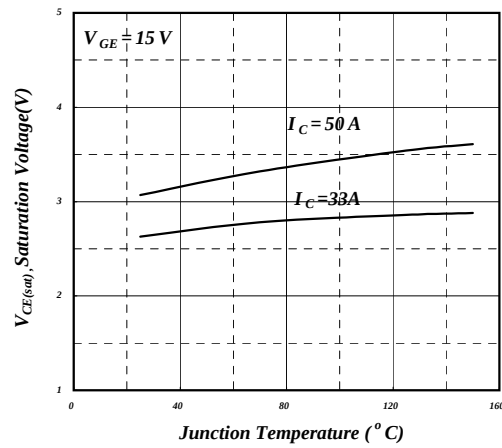


Fig 4. Typical Collector-Emmitter Voltage v.s. Junction Temperature

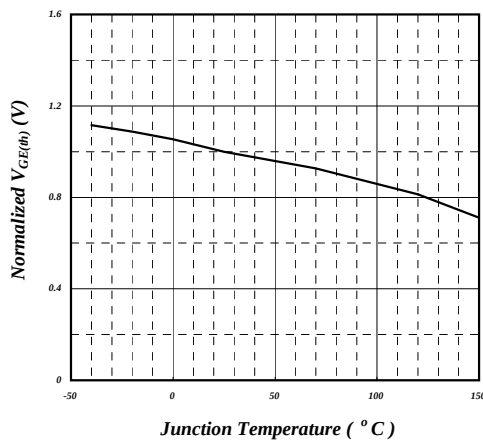


Fig 5. Gate Threshold Voltage v.s. Junction Temperature

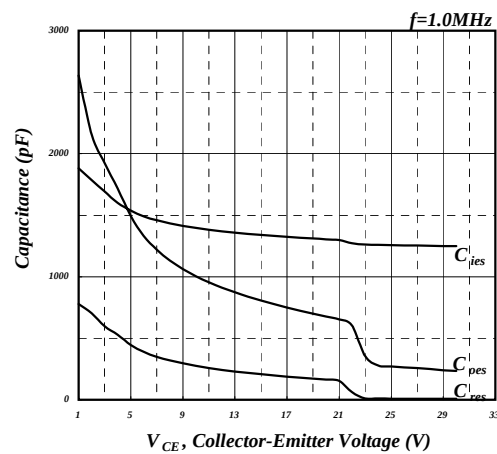


Fig 6. Typical Capacitance Characteristics

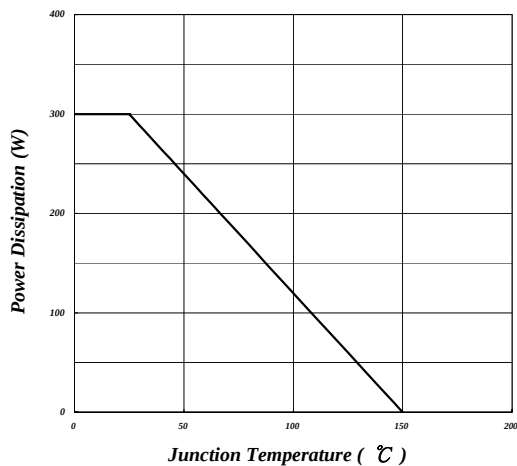


Fig 7. Power Dissipation vs. Junction Temperature

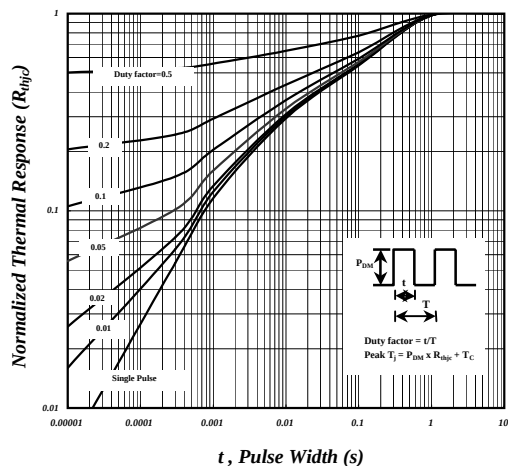


Fig 8. Effective Transient Thermal Impedance, Junction-to-Case (IGBT)

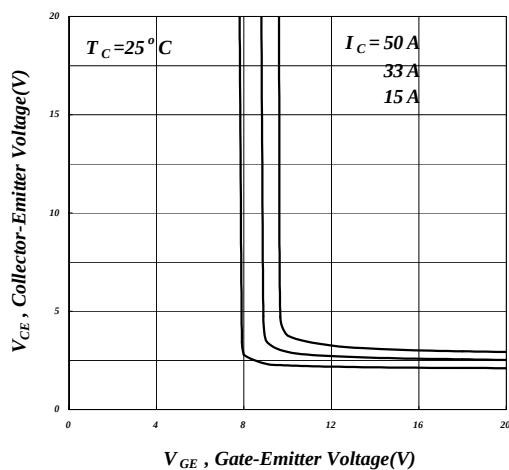


Fig 9. Saturation Voltage vs. V_{GE}

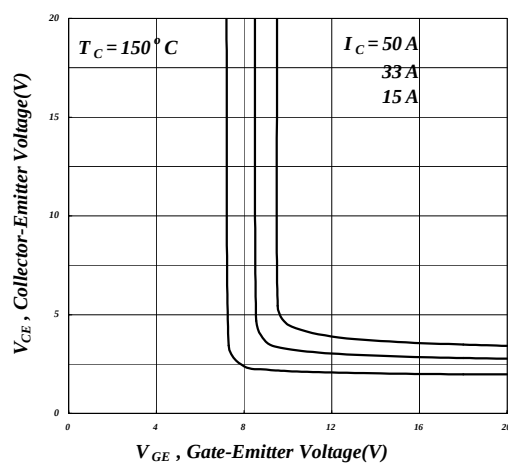


Fig 10. Saturation Voltage vs. V_{GE}

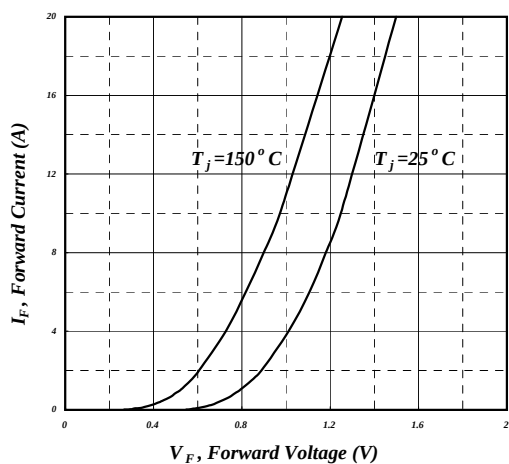


Fig 11. Forward Characteristic of Diode

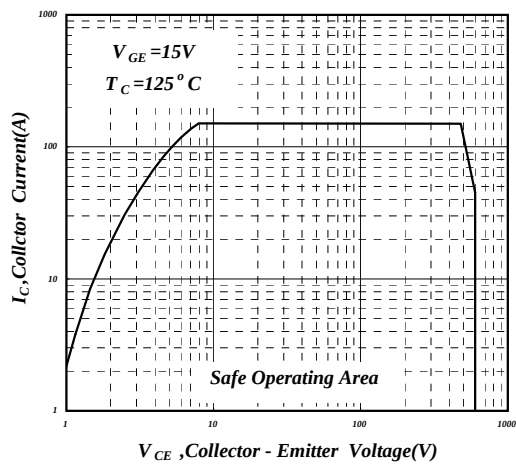


Fig 12. SOA Characteristics