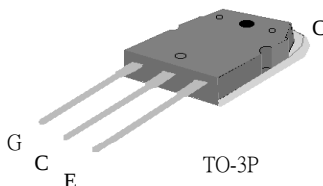


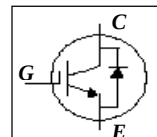


Features

- ▼ High Speed Switching
- ▼ Low Saturation Voltage
 $V_{CE(sat)}$, Typ.=1.8V@ $I_C=20A$
- ▼ Built-in Fast Recovery Diode



V_{CES}	600V
I_C	20A



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{CES}	Collector-Emitter Voltage	600	V
V_{GE}	Gate-Emitter Voltage	± 20	V
$I_C@T_C=25^\circ C$	Collector Current	40	A
$I_C@T_C=100^\circ C$	Collector Current	20	A
I_{CM}	Pulsed Collector Current ¹	160	A
I_{DM}	Collector to Emitter Diode Forward Current ¹	40	A
$P_D@T_C=25^\circ C$	Maximum Power Dissipation	125	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:

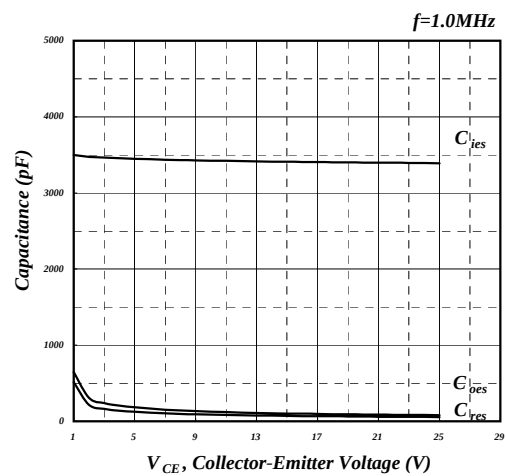
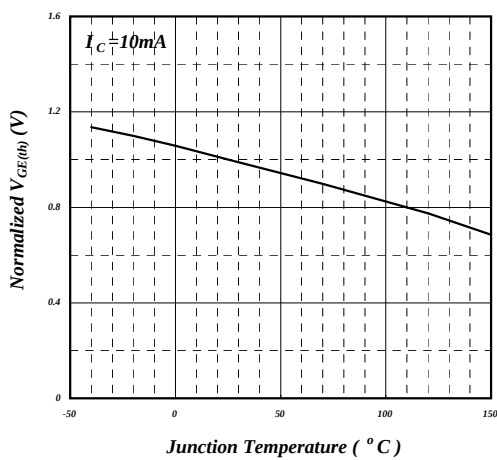
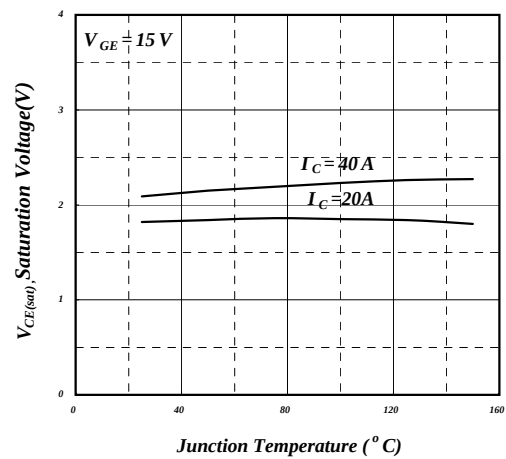
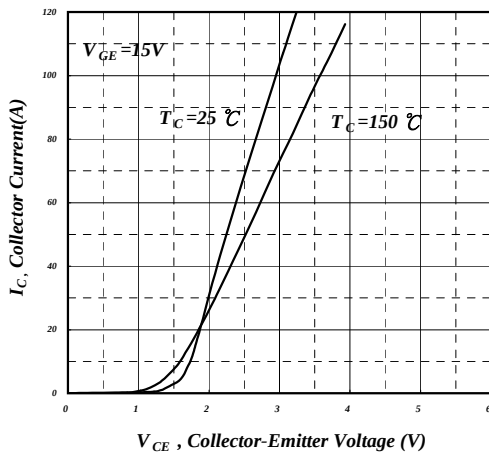
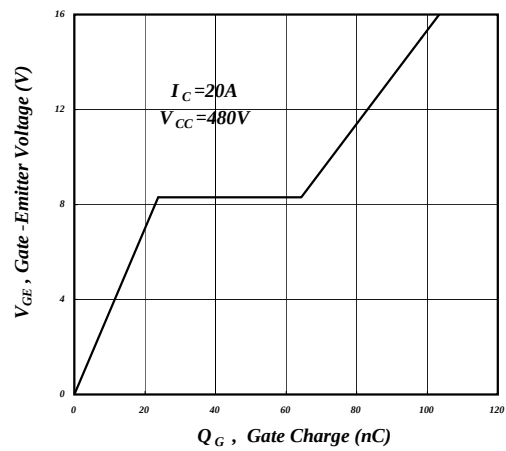
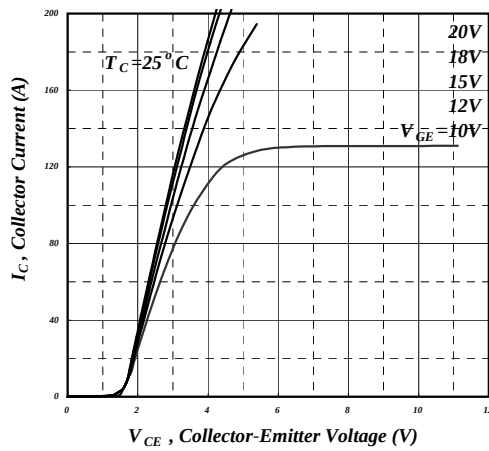
1. Pulse width limited by max. junction temperature .

Thermal Data

Symbol	Parameter	Value	Units
R_{thj-c}	Thermal Resistance Junction-Case	1	$^\circ C/W$
$R_{thj-c}(Diode)$	Thermal Resistance Junction-Case	1.5	$^\circ C/W$
R_{thj-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	$V_{GE}=\pm 20V, V_{CE}=0V$	-	-	± 100	nA
I_{CES}	Collector-Emitter Leakage Current	$V_{CE}=600V, V_{GE}=0V$	-	-	100	μA
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$V_{GE}=15V, I_C=20A$	-	1.8	2.3	V
$V_{GE(th)}$	Gate Threshold Voltage	$V_{CE}=V_{GE}, I_C=250\mu A$	2	-	6	V
Q_g	Total Gate Charge	$I_C=20A$	-	100	160	nC
Q_{ge}	Gate-Emitter Charge	$V_{CE}=480V$	-	24	-	nC
Q_{gc}	Gate-Collector Charge	$V_{GE}=15V$	-	40	-	nC
$t_{d(on)}$	Turn-on Delay Time	$V_{CE}=480V,$ $I_C=20A,$	-	50	-	ns
t_r	Rise Time	$V_{GE}=15V,$	-	20	-	ns
$t_{d(off)}$	Turn-off Delay Time	$R_G=5\Omega,$	-	135	-	ns
t_f	Fall Time	Inductive Load	-	190	380	ns
E_{on}	Turn-On Switching Loss		-	0.3	-	mJ
E_{off}	Turn-Off Switching Loss		-	0.9	-	mJ
C_{ies}	Input Capacitance	$V_{GE}=0V$	-	3400	5440	pF
C_{oes}	Output Capacitance	$V_{CE}=30V$	-	75	-	pF
C_{res}	Reverse Transfer Capacitance	$f=1.0MHz$	-	50	-	pF
V_F	FRD Forward Voltage	$I_F=20A$	-	1.65	2	V
t_{rr}	FRD Reverse Recovery Time	$I_F=10A$	-	50	-	ns
Q_{rr}	FRD Reverse Recovery Charge	$di/dt = 100 A/\mu s$	-	80	-	nC



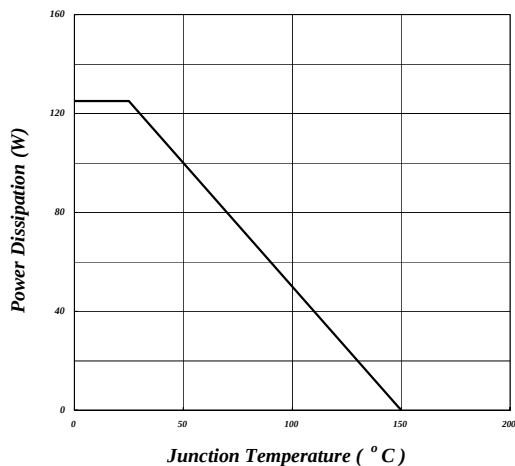


Fig 7. Power Dissipation vs. Junction Temperature

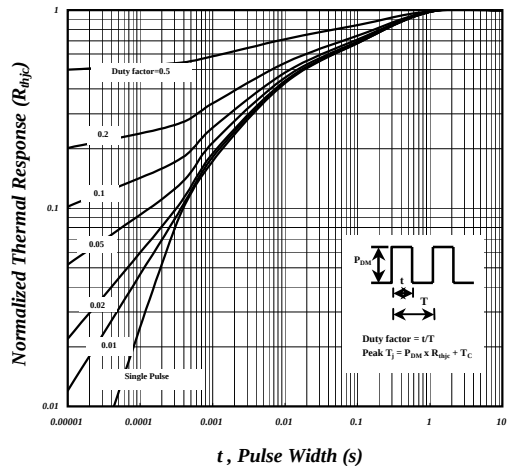


Fig 8. Effective Transient Thermal Impedance

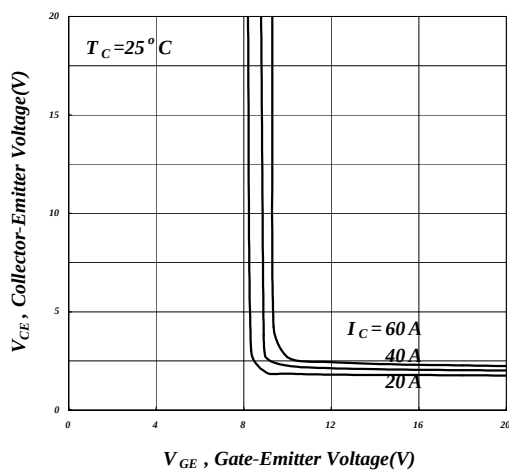


Fig 9. Saturation Voltage vs. V_{GE}

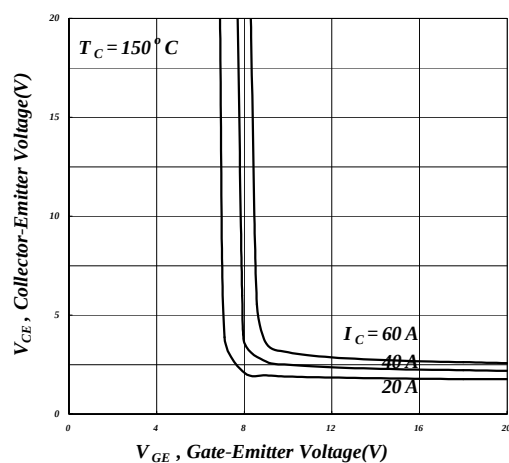


Fig 10. Saturation Voltage vs. V_{GE}

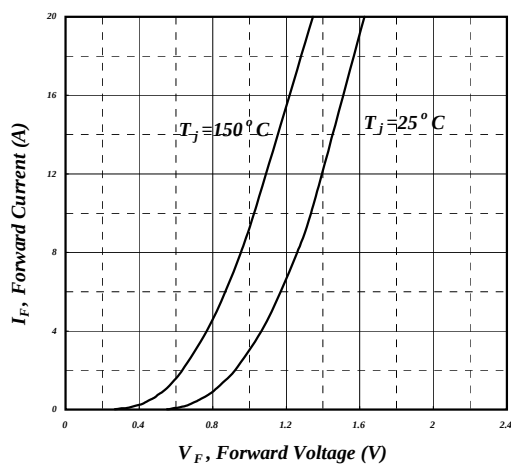


Fig 11. Forward Characteristic of Diode

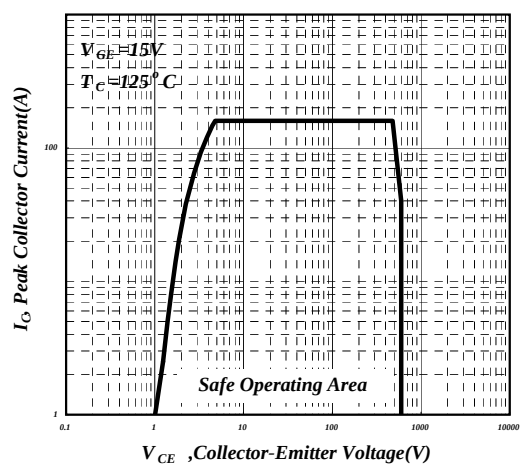


Fig 12. Turn-off SOA