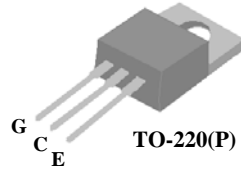


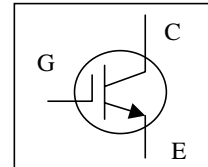


## Features

- ▼ High Speed Switching
- ▼ Low Saturation Voltage  
 $V_{CE(sat),typ.}=1.8V@I_C=20A$
- ▼ RoHS Compliant & Halogen-Free



$V_{CES}$	600V
$I_C$	20A



## Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
$V_{CES}$	Collector-Emitter Voltage	600	V
$V_{GE}$	Gate-Emitter Voltage	$\pm 20$	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 <sup>1</sup>	160	A
$P_D@T_C=25^\circ C$	Maximum Power Dissipation	104	W
$T_{STG}$	Storage Temperature Range	-55 to 150	$^\circ C$
$T_J$	Operating Junction Temperature Range	150	$^\circ C$

### Notes:

1.Pulse width limited by Max. junction temperature .

## Thermal Data

Symbol	Parameter	Value	Units
Rthj-c	Thermal Resistance Junction-Case	1.2	$^\circ C/W$
Rthj-a	Thermal Resistance Junction-Ambient	62	$^\circ C/W$

## 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	$V_{GE}=\pm 20V, V_{CE}=0V$	-	-	$\pm 100$	nA
$I_{CES}$	Collector-Emitter Leakage Current	$V_{CE}=600V, V_{GE}=0V$	-	-	500	$\mu A$
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$V_{GE}=15V, I_C=20A$	-	1.8	2.5	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$V_{GE}=15V, I_C=35A$	-	2	-	V
$V_{GE(th)}$	Gate Threshold Voltage	$V_{CE}=V_{GE}, I_C=250\mu A$	2	-	7	V
$Q_g$	Total Gate Charge	$I_C=20A$	-	100	160	nC
$Q_{ge}$	Gate-Emitter Charge	$V_{CC}=480V$	-	24	-	nC
$Q_{gc}$	Gate-Collector Charge	$V_{GE}=15V$	-	40	-	nC
$t_{d(on)}$	Turn-on Delay Time	$V_{CE}=480V,$	-	50	-	ns
$t_r$	Rise Time	$I_C=20A,$	-	20	-	ns
$t_{d(off)}$	Turn-off Delay Time	$V_{GE}=15V,$	-	135	-	ns
$t_f$	Fall Time	$R_G=5\Omega,$ 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

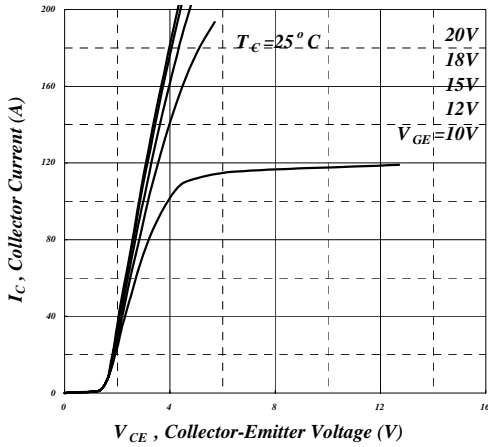


Fig 1. Typical Output Characteristics

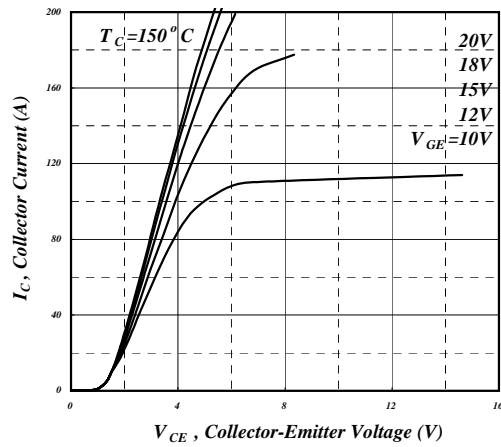


Fig 2. Typical Output Characteristics

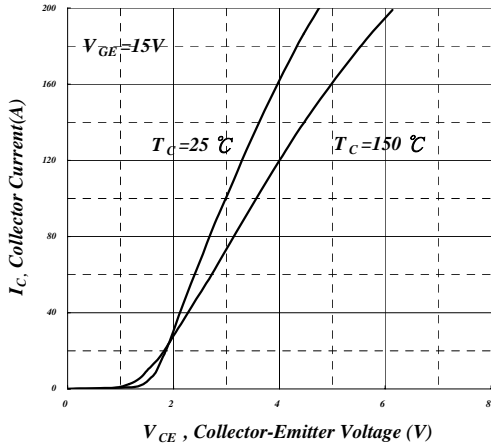


Fig 3. Typical Saturation Voltage Characteristics

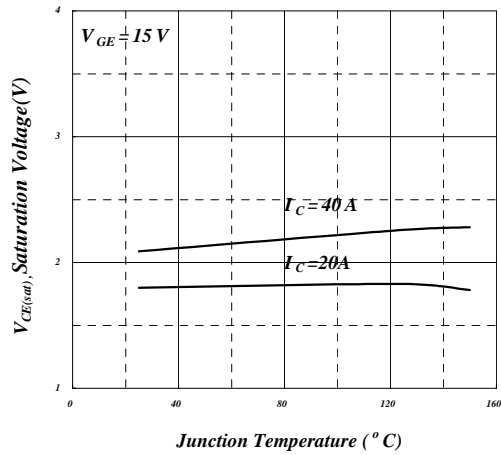


Fig 4. Typical Collector- Emitter Voltage v.s. Junction Temperature

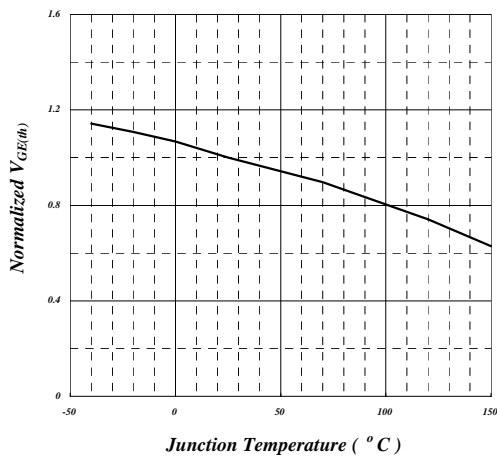


Fig 5. Gate Threshold Voltage v.s. Junction Temperature

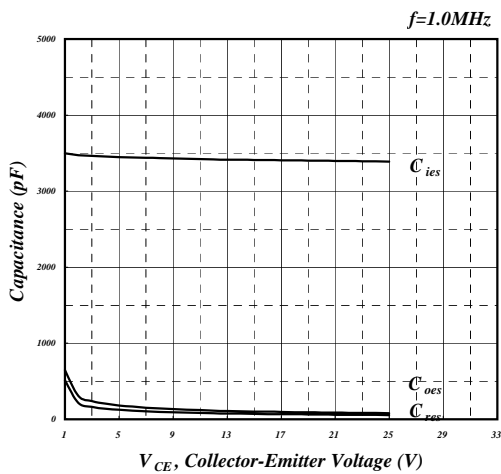


Fig 6. Typical Capacitance Characteristics

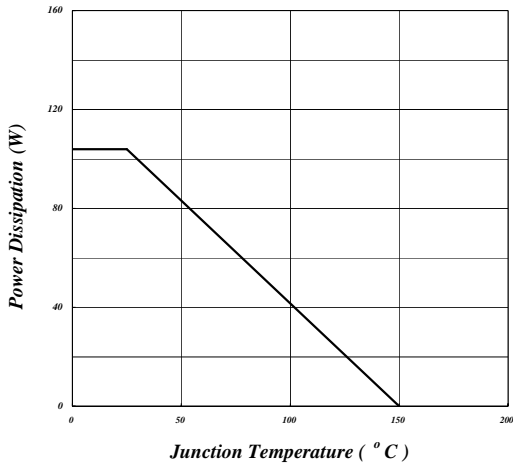


Fig 7. Power Dissipation vs. Junction Temperature

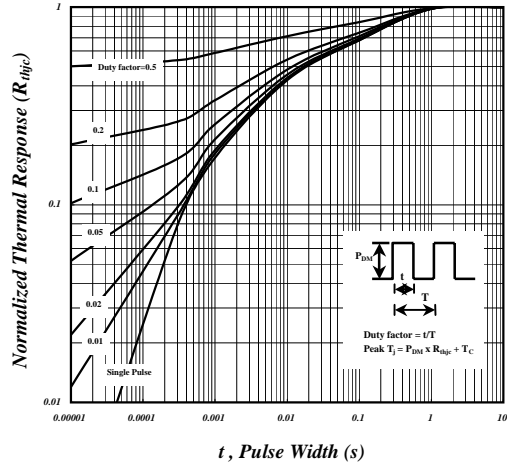


Fig 8. Effective Transient Thermal Impedance

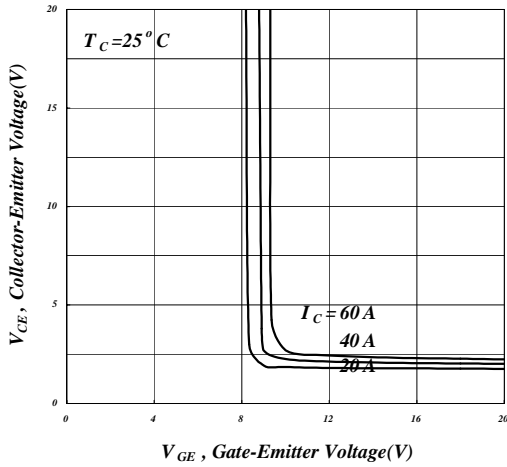


Fig 9. Saturation Voltage vs.  $V_{GE}$

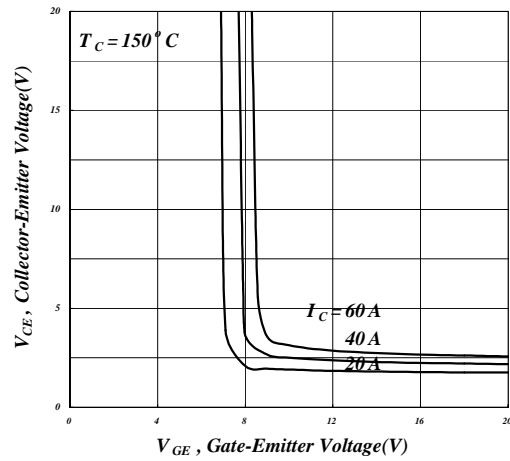


Fig 10. Saturation Voltage vs.  $V_{GE}$

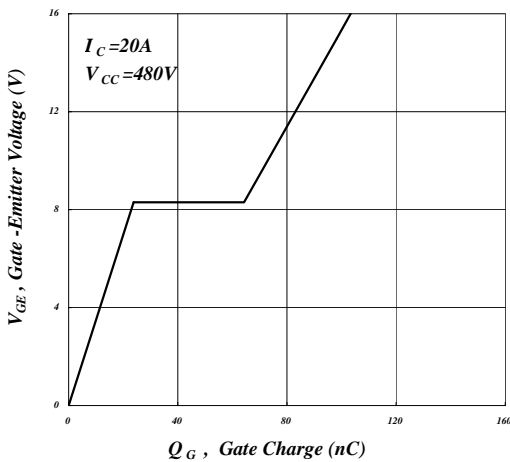


Fig 11. Gate Charge Characteristics

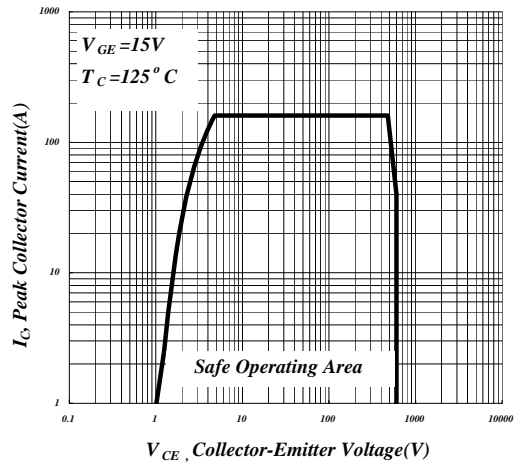


Fig 12. Turn-off SOA