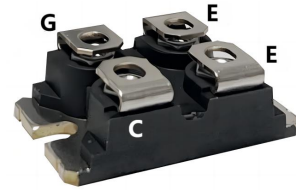


Features

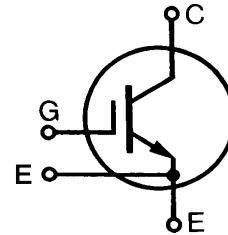
- $V_{CE}=1200V, I_C=150A$
- Very Low Saturation Voltage:
 $V_{CE(sat)} = 1.65V @ I_C = 150 A \text{ at } T_{vj}=25^{\circ}C$
- Maximum Junction Temperature: $T_J = 175^{\circ}C$
- Positive Temperature Co-Efficient
- Tight Parameter Distribution
- High Input Impedance



SOT-227

Applications

- EV-Charge
- AC motor control
- Industrial UPS
- Other Power-Train Applications
Requiring High Power Switch



Absolute Ratings($T_c=25^{\circ}C$)

Parameter	Symbol		Value	Unit
Collector-Emitter Voltage	V _{ces}		1200	V
Collector Current-continuous	I _C	T _C =25℃	300	A
		T _C =100℃	150	A
Collector Current-pulse (note 1)	I _{CM}		450	A
Gate-Emitter Voltage	V _{GES}		±20	V
Power Dissipation	P _D	T _C =25℃	790	W
		T _C =100℃	395	W
Operating Temperature Range	T _J		-40~+175	℃
Storage Temperature Range	T _{STG}		-55~+150	
Short Circuit Withstand Time (note 2)	t _{sc}		5	us
Maximum Lead Temperature for Soldering Purposes	T _{sold}		260	℃
Isolation Voltage for Case to Terminal	V _{ISO}		3.0	KV

Electrical Characteristics

Parameter	Symbol	Tests conditions	Min	Type	Max	Units
Off-Characteristics						
Collector-Emitter Voltage	BV_{CES}	$I_C=6mA, V_{GE}=0V$	1200	-	-	V
Zero Gate Voltage Collector Current	I_{CES}	$V_{CE}=1200V, V_{GE}=0V, T_C=25^{\circ}C$	-	-	100	μA
Gate-body leakage current, forward	I_{GESF}	$V_{CE}=0V, V_{GE}=20V$	-	-	400	nA
Gate-body leakage current, reverse	I_{GESR}	$V_{CE}=0V, V_{GE}=-20V$	-	-	-400	nA
On-Characteristics						
Gate Threshold Voltage	$V_{GE(th)}$	$V_{CE}=V_{GE}, I_C=6mA$	5.0	5.7	6.5	V
Collector-Emitter saturation Voltage	V_{CESAT}	$V_{GE}=15V, I_C=150A$	-	1.65	2.25	V
Dynamic Characteristics						
Input capacitance	C_{ies}	$V_{CE}=25V, V_{GE}=0V, f=1.0MHz$	-	11	-	nF
Output capacitance	C_{oes}		-	1654	-	pF
Reverse transfer capacitance	C_{res}		-	531	-	pF
Short-circuit collector current	I_{SC}	$V_{CC} \leq 600V, V_{GE} = 15V, t_{SC} \leq 5\mu s, (Note\ 3)$	-	700	-	A

Electrical Characteristics

Parameter	Symbol	Tests conditions	Min	Type	Max	Units
Switching Characteristics						
Turn-on delay time	$t_{d(on)}$	$V_{CC}=600V, I_C=150A, R_G=2\Omega, V_{GE}=15V, \text{Inductive Load}, T_C=25^{\circ}C$	-	182	-	ns
Turn-On rise time	t_r		-	27	-	ns
Turn-Off delay time	$t_{d(off)}$		-	355	-	ns
Turn-Off Fall time	t_f		-	215	-	ns
Turn-on Loss	E_{on}		-	5.8	-	mJ
Turn-off Loss	E_{off}		-	5.2	-	mJ
Total Loss	E_{ts}		-	11.0	-	mJ
Turn-on delay time	$t_{d(on)}$	$V_{CC}=600V, I_C=150A, R_G=2\Omega, V_{GE}=15V, \text{Inductive Load}$	-	176	-	ns
Turn-On rise time	t_r		-	32	-	ns
Turn-Off delay time	$t_{d(off)}$		-	373	-	ns

Turn-Off Fall time	t_f	$T_c=150^{\circ}\text{C}$	-	251	-	ns
Turn-on switching Loss	E_{on}		-	6.7	-	mJ
Turn-off switching Loss	E_{off}		-	8.3	-	mJ
Total switching Loss	E_{ts}		-	15.0	-	mJ
Gate Charge	Q_g	$V_{CC}=600\text{V}, I_c=150\text{A}$ $V_{GE}=15\text{V}$	-	780	-	nC
Gate to Emitter Charge	Q_{ge}		-	175	-	nC
Gate to Collector Charge	Q_{gc}		-	296	-	nC

Thermal Characteristic

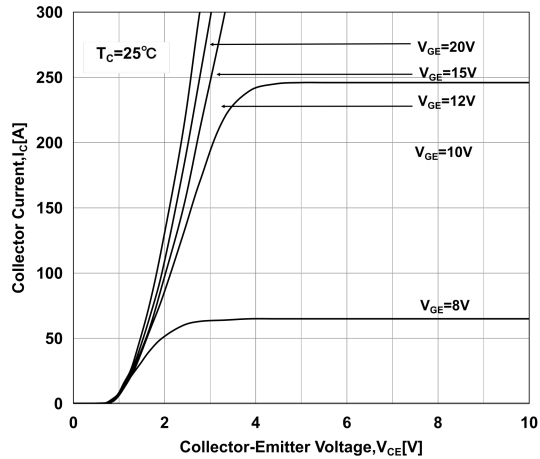
Parameter	Symbol	Max	Unit
Thermal Resistance, Junction to Case (IGBT)	$R_{th(j-c)}$	0.19	$^{\circ}\text{C}/\text{W}$
Thermal Resistance, Junction to Ambient	$R_{th(j-A)}$	40	$^{\circ}\text{C}/\text{W}$

Notes:

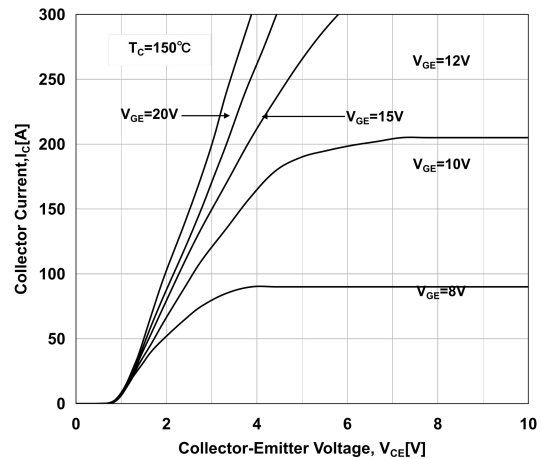
1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. Switching times & energy losses may increase for higher $V_{CE}(\text{clamp})$, T_J or R_G
3. Allowed number of short circuits < 1000, Time between short circuits ≥ 1.0 s

Electrical Characteristics(curves)

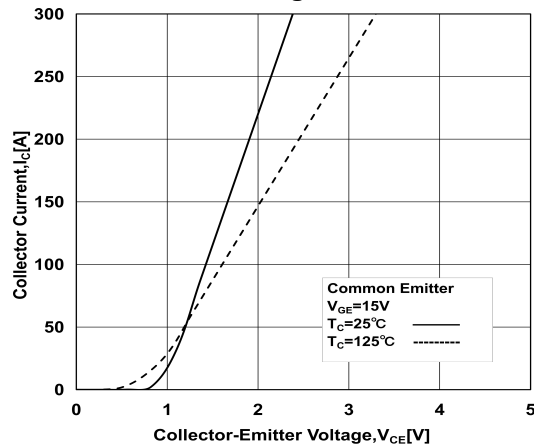
Typical Output Characteristics



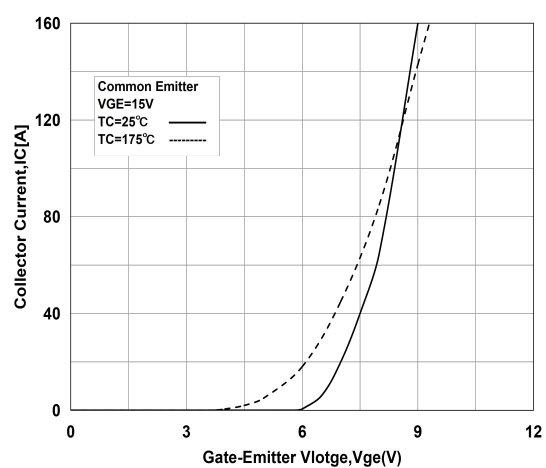
Typical Output Characteristics



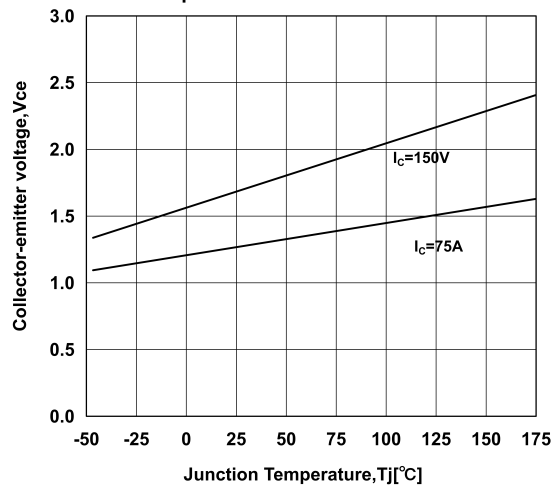
Saturation Voltage Characteristics



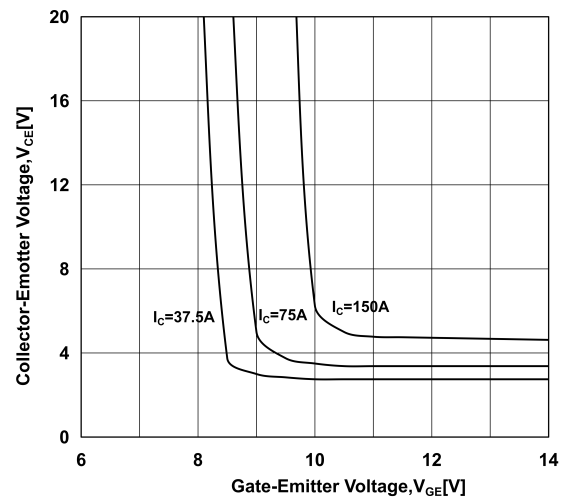
Transfer Characteristics

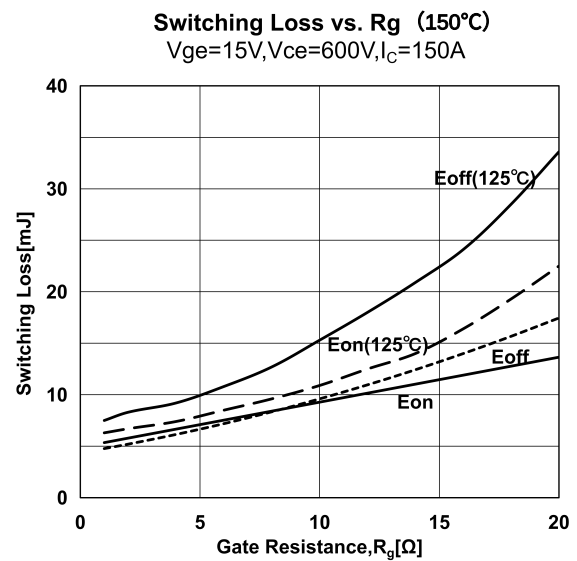
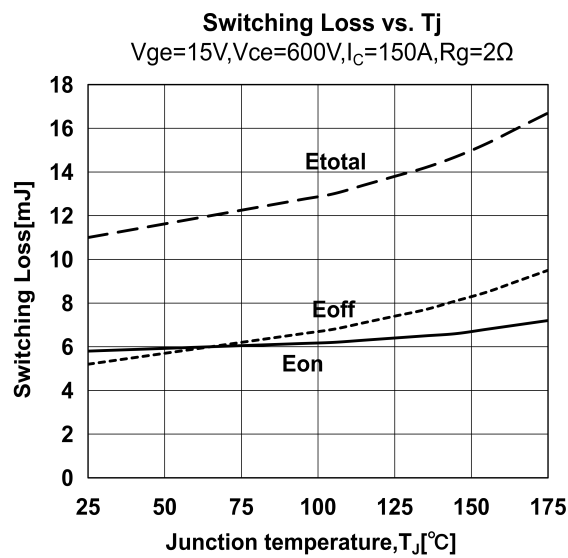
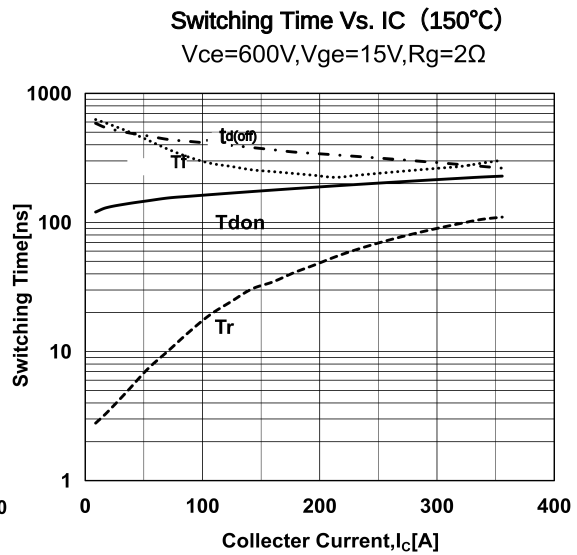
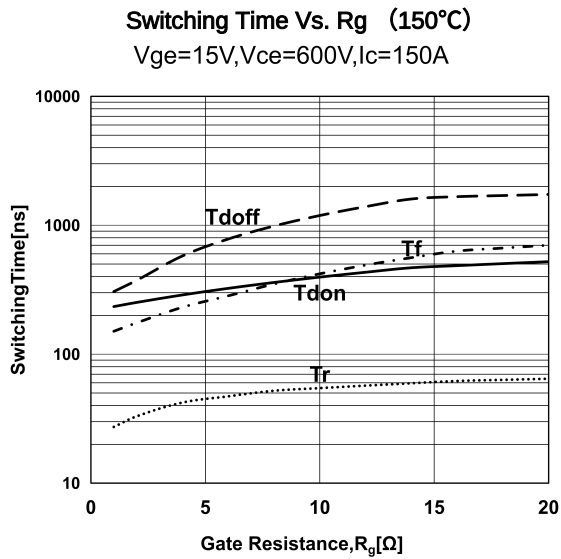
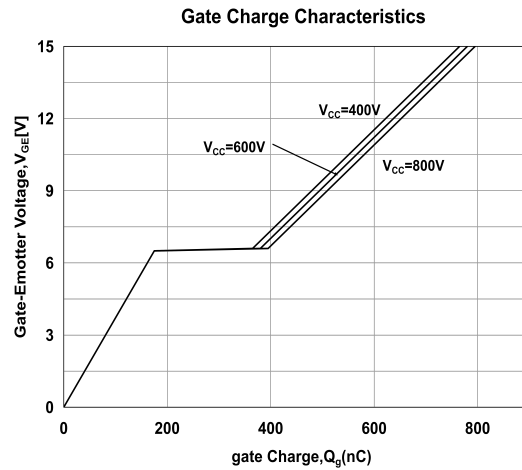
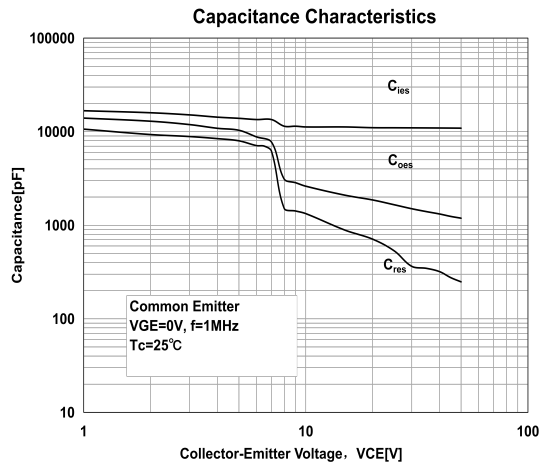


Normalized Saturation Voltage vs. Junction Temperature at Variant Current Level

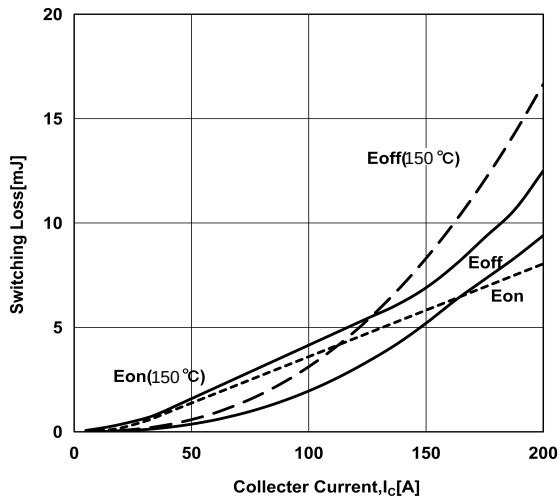


Saturation Voltage vs. V_{GE} @ 25°C

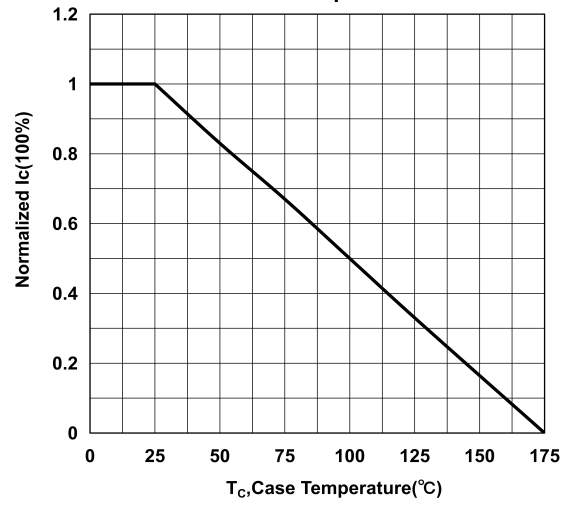




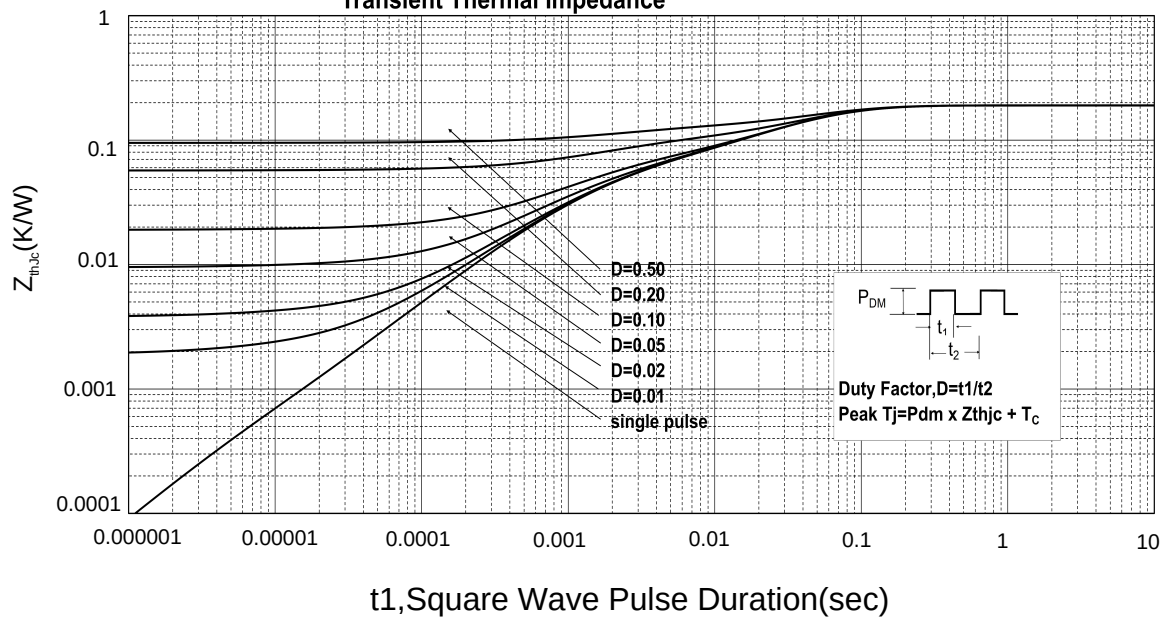
Switching Loss vs. I_c
 $V_{ge}=15V, V_{ce}=600V, R_g=2\Omega$



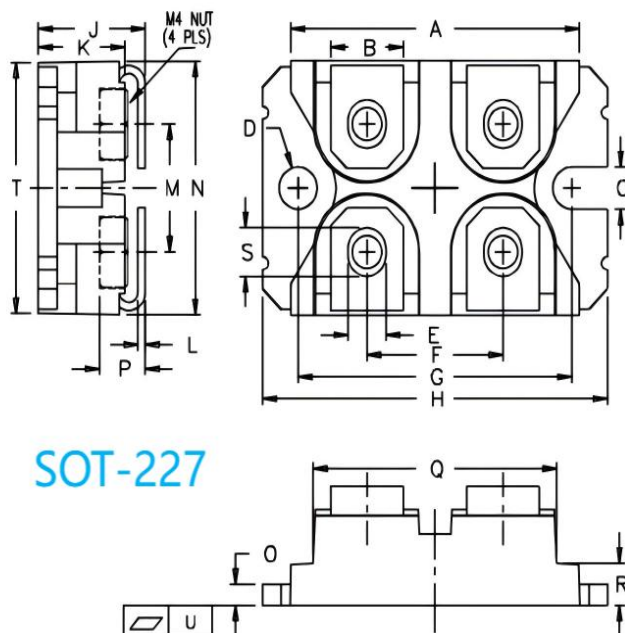
Maximum Drain Current vs
Case Temperature



Transient Thermal Impedance



Package Dimension



Dim.	Milimeter		Inches	
	Min.	Max.	Min.	Max.
A	31.66	32.06	1.246	1.262
B	7.80	8.20	0.307	0.323
C	4.00	4.40	0.157	0.173
D	4.00	4.40	0.157	0.173
E	4.00	4.40	0.157	0.173
F	14.45	14.85	0.569	0.585
G	30.00	30.40	1.181	1.197
H	37.99	38.39	1.496	1.511
J	12.00	12.40	0.472	0.488
K	9.33	9.73	0.367	0.383
L	0.65	1.05	0.025	0.041
M	12.15	12.55	0.478	0.494
N	24.90	25.30	0.980	0.996
O	1.85	2.25	0.073	0.089
P	5.00	5.40	0.197	0.213
Q	26.60	27.00	1.047	1.063
R	4.05	4.45	0.159	0.175
S	4.49	4.89	0.177	0.193
T	24.78	25.18	0.976	0.991
U	-0.05	0.10	-0.002	0.004