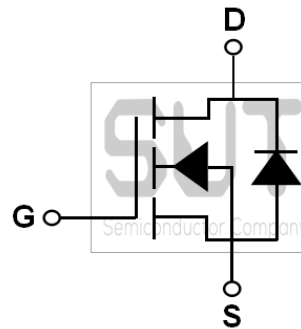
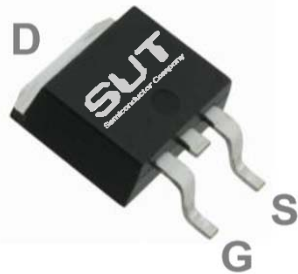


## N-Channel 100-V<sub>(D-S)</sub> SGT MOSFET

PRODUCT SUMMARY		
B <sub>VDSS</sub> (V)	R <sub>DS(on)</sub> (mΩ)(MAX)	I <sub>D</sub> (A)
100	90@V <sub>GS</sub> =10V	15

### TO252 Pin Configuration



### ABSOLUTE MAXIMUM RATINGS(T<sub>C</sub>=25°C UNLESS OTHERWISE NOTED)

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V <sub>DS</sub>	100	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Drain Current-Continuous (T <sub>C</sub> =25°C)	I <sub>D</sub>	15	A
Drain Current-Continuous (T <sub>C</sub> =100°C)		9.5	A
Drain Current-Pulsed <sup>1</sup>	I <sub>DM</sub>	60	A
Power Dissipation (T <sub>C</sub> =25°C)	P <sub>D</sub>	50	W
Power Dissipation-De-rate above 25°C		0.4	W/°C
Storage Temperature Range	T <sub>STG</sub>	-50 to 150	°C
Operating Junction Temperature Range	T <sub>J</sub>	-50 to 150	°C

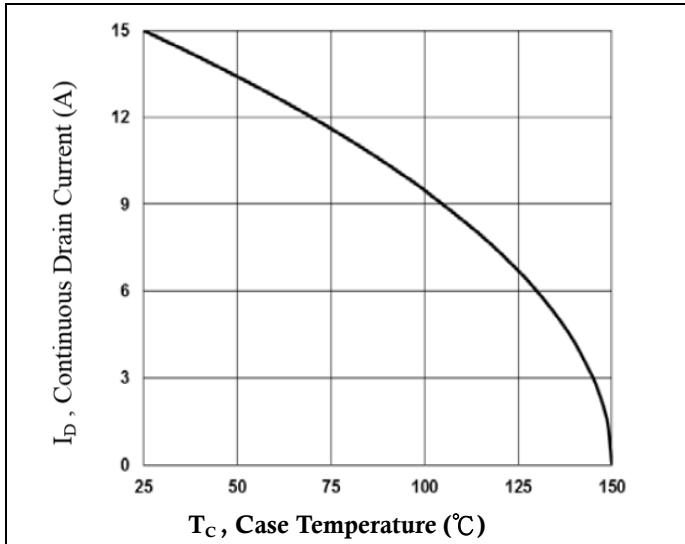
### THERMAL CHARACTERISTICS

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance Junction to ambient	R <sub>θJA</sub>	---	62	°C/W
Thermal Resistance Junction to Case	R <sub>θJC</sub>	---	2.5	°C/W

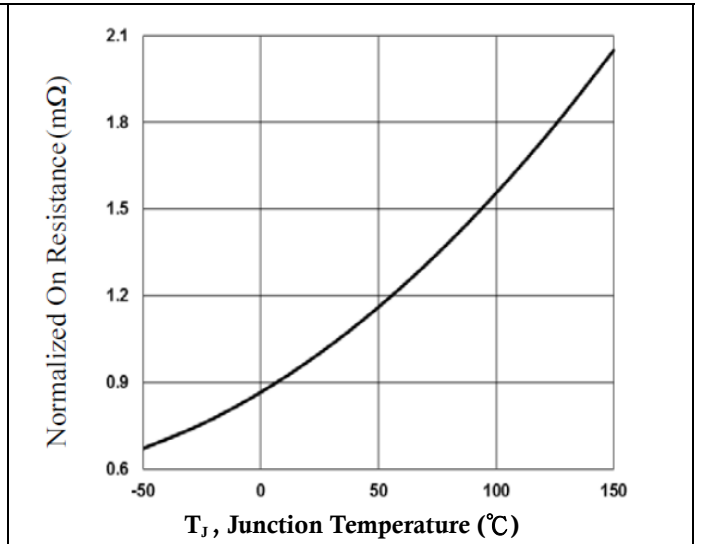
ELECTRICAL CHARACTERISTICS (T <sub>J</sub> =25°C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	100	---	---	V
BV <sub>DSS</sub> Temperature Coefficient	ΔBV <sub>DSS</sub> /ΔT <sub>J</sub>	Reference to 25°C, I <sub>D</sub> =1mA	---	0.05	---	V/°C
Drain-Source Leakage Current	I <sub>DSS</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =100V, T <sub>J</sub> =25°C	---	---	1	uA
		V <sub>GS</sub> =0V, V <sub>DS</sub> =80V, T <sub>J</sub> =125°C	---	---	10	uA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	---	---	±100	nA
<b>On Characteristics</b>						
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =5A	---	72	90	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =3A	---	75	100	mΩ
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250uA	1.2	1.6	2.5	V
V <sub>GS(th)</sub> Temperature Coefficient	ΔV <sub>GS(th)</sub>		---	-5.0	---	mV/°C
Forward Transconductance	g <sub>fs</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =3A	---	8.7	---	S
<b>Dynamic and Switching Characteristics</b>						
Total Gate Charge <sup>2, 3</sup>	Q <sub>g</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =48V, I <sub>D</sub> =5A	---	9.3	13	nC
Gate-Source Charge <sup>2, 3</sup>	Q <sub>gs</sub>		---	2.1	4.2	
Gate-Drain Charge <sup>2, 3</sup>	Q <sub>gd</sub>		---	1.8	4.0	
Turn-On Delay Time <sup>2, 3</sup>	T <sub>d(on)</sub>	V <sub>GS</sub> =10V, V <sub>DD</sub> =30V, R <sub>G</sub> =3.3Ω, I <sub>D</sub> =1A	---	2.9	6.0	ns
Rise Time <sup>2, 3</sup>	T <sub>r</sub>		---	9.5	18	
Turn-Off Delay Time <sup>2, 3</sup>	T <sub>d(off)</sub>		---	18.4	35	
Fall Time <sup>2, 3</sup>	T <sub>f</sub>		---	5.3	10	
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =50V, F=1MHz	---	1480	2150	pF
Output Capacitance	C <sub>oss</sub>		---	480	700	
Reverse Transfer Capacitance	C <sub>rss</sub>		---	35	55	
Gate resistance	R <sub>g</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, F=1MHz	---	1.3	2.6	Ω
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
Continuous Source Current	I <sub>S</sub>	V <sub>G</sub> =V <sub>D</sub> =0V, Force Current	---	---	15	A
Pulsed Source Current	I <sub>SM</sub>		---	---	60	A
Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =1A, T <sub>J</sub> =25°C	---	---	1.0	V
Reverse Recovery Time <sup>2</sup>	t <sub>rr</sub>	V <sub>GS</sub> =30V, I <sub>S</sub> =1A, dI/dt=100A/μs, T <sub>J</sub> =25°C	---	---	---	ns
Reverse Recovery Charge <sup>2</sup>	Q <sub>rr</sub>		---	---	---	nC

Note :

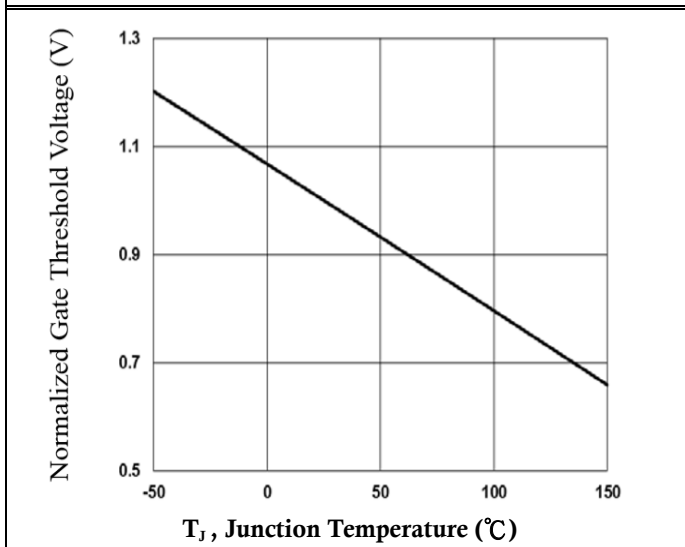
1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
3. Essentially independent of operating temperature.



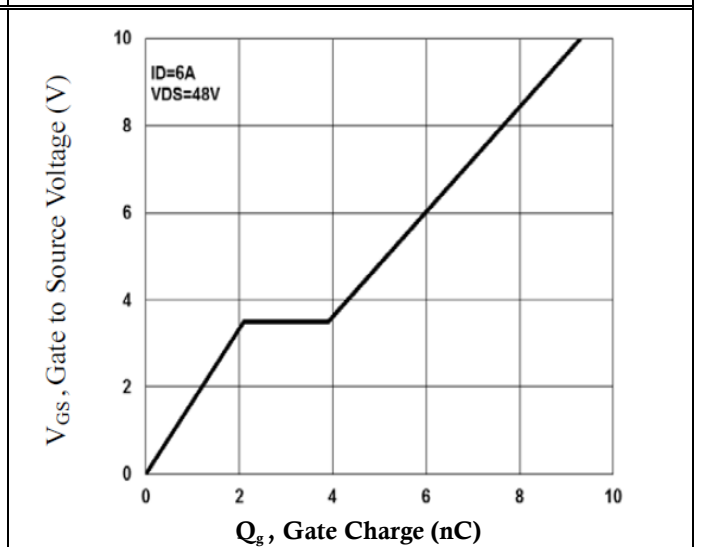
**Continuous Drain Current vs.  $T_C$**



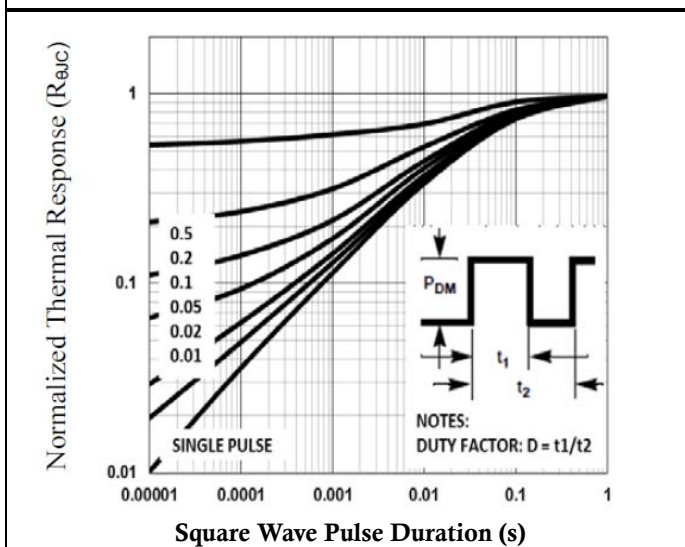
**Normalized  $R_{DS(ON)}$  vs.  $T_J$**



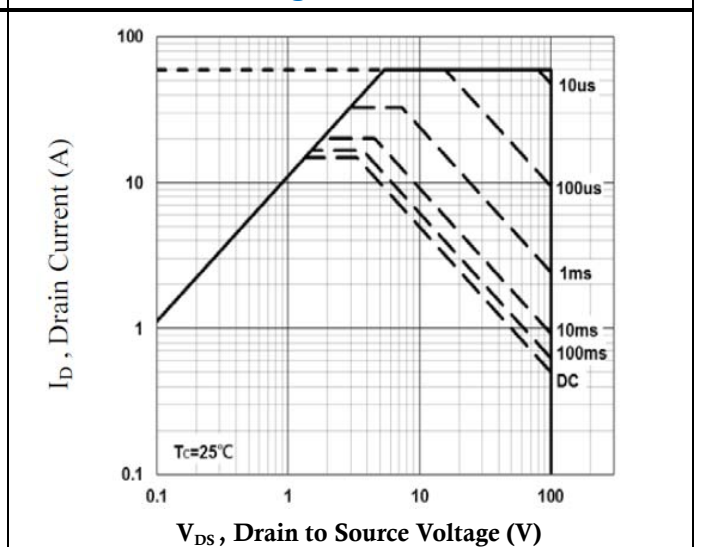
**Normalized  $V_{th}$  vs.  $T_J$**



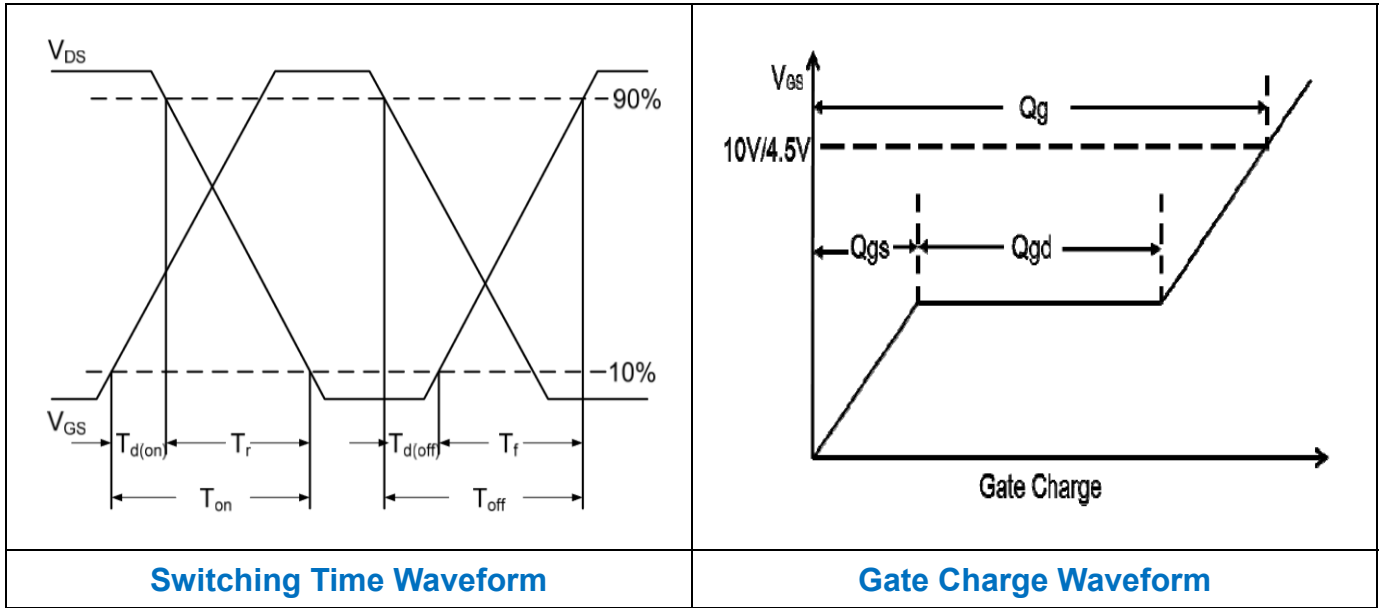
**Gate Charge Characteristics**



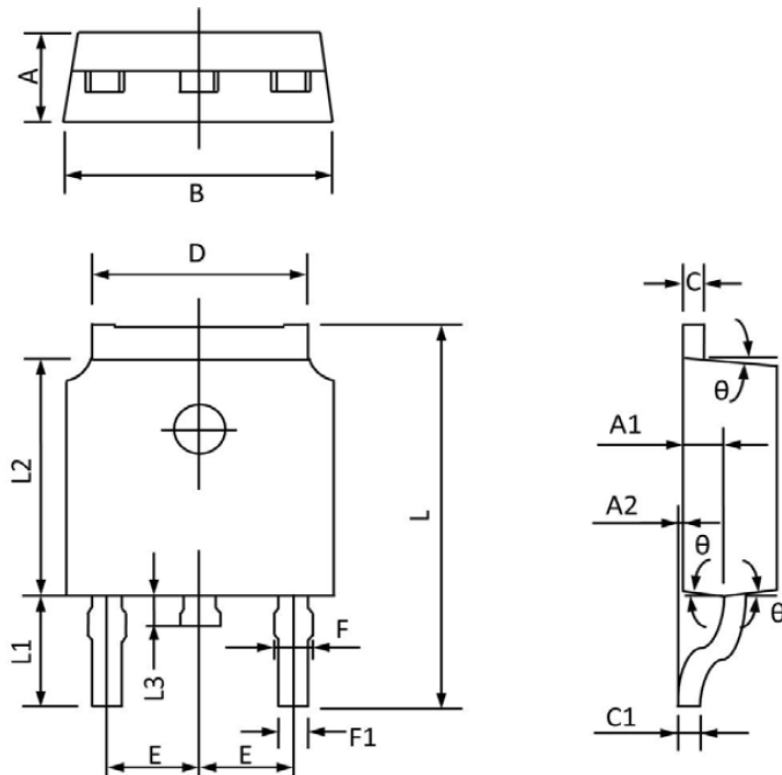
**Normalized Transient Impedance**



**Maximum Safe Operation Area**



TO252 PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	2.400	2.200	0.094	0.087
A1	1.110	0.910	0.044	0.036
A2	0.150	0.000	0.006	0.000
B	6.700	6.500	0.264	0.256
C	0.580	0.460	0.230	0.018
C1	0.580	0.460	0.230	0.018
D	5.460	5.100	0.215	0.201
E	2.386	2.186	0.094	0.086
F	0.940	0.740	0.037	0.029
F1	0.860	0.660	0.034	0.026
L	10.400	9.800	0.409	0.386
L1	2.900(REF)		0.114(REF)	
L2	6.200	6.000	0.244	0.236
L3	1.000	0.600	0.039	0.024
θ	9°	3°	9°	3°