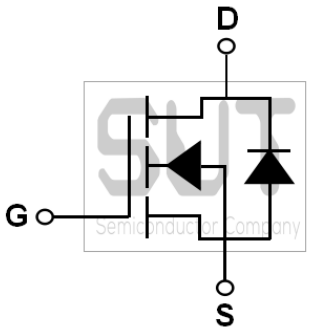
Version 1.0 Date 2019.03.27 Datasheet

N-Channel 100-$V_{(D-S)}$ SGT MOSFET

PRODUCT SUMMARY		
B_{VDSS}(V)	$R_{DS(on)}$ (mΩ)(MAX)	I_D(A)
100	13.5@V_{GS}=10V	50

PPAK5X6 Pin Configuration

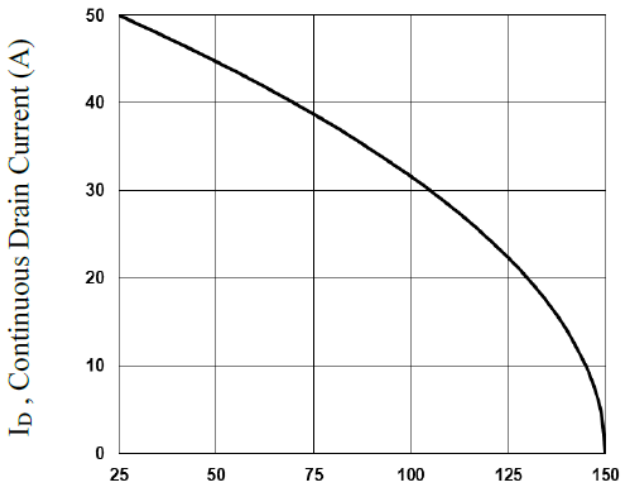


ABSOLUTE MAXIMUM RATINGS(T_C=25℃ UNLESS OTHERWISE NOTED)			
Parameter	**Symbol**	**Rating**	**Units**
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	+20/-12	V
Drain Current-Continuous (T_C=25℃)	I_D	50	A
Drain Current-Continuous (T_C=100℃)		32	A
Drain Current-Pulsed[1]	I_{DM}	200	A
Single Pulse Avalanche Energy[2]	EAS	115	mJ
Single Pulse Avalanche Current[2]	IAS	48	A
Power Dissipation (T_C=25℃)	P_D	98	W
Power Dissipation-Derate above 25℃		0.79	W/℃
Storage Temperature Range	T_{STG}	-50 to 150	℃
Operating Junction Temperature Range	T_J	-50 to 150	℃

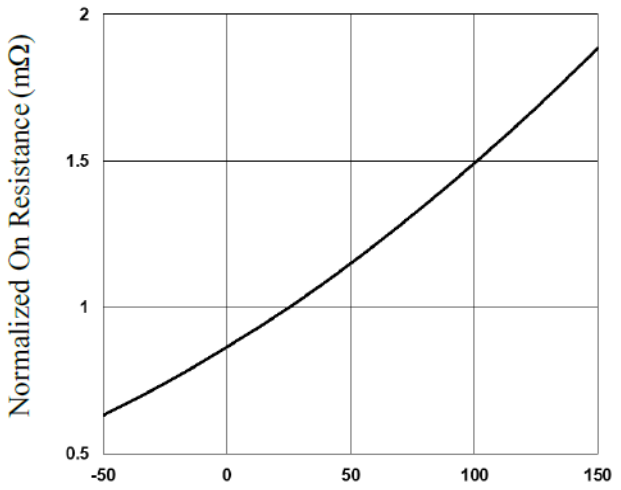
THERMAL CHARACTERISTICS				
Parameter	**Symbol**	**Typ.**	**Max.**	**Unit**
Thermal Resistance Junction to ambient	$R_{\theta JA}$	---	62	℃/W
Thermal Resistance Junction to Case	$R_{\theta JC}$	---	1.27	℃/W

ELECTRICAL CHARACTERISTICS (T_J=25℃ UNLESS OTHERWISE NOTED)						
Parameter	**Symbol**	**Test Condition**	**Min.**	**Typ.**	**Max.**	**Unit**
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V , I_D=250uA	100	---	---	V
BV_{DSS}Temperature Coefficient	△BV_{DSS}/△T_J	Reference to 25℃,I_D=1mA	---	0.06	---	V/℃
Drain-Source Leakage Current	I_{DSS}	V_{GS}=0V,V_{DS}=100V,T_J=25℃	---	---	1	uA
		V_{GS}=0V,V_{DS}=80V,T_J=125℃	---	---	10	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=20V , V_{DS}=0V	---	---	±100	nA
On Characteristics						
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V , I_D=25A	---	11	13.5	mΩ
		V_{GS}=10V, I_D=25A(T_J=125℃)	---	18.5	---	mΩ
		V_{GS}=4.5V , I_D=20A	---	15.9	21	mΩ
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS} , I_D=250uA	1.0	1.5	2.5	V
$V_{GS(th)}$ Temperature Coefficient	△$V_{GS(th)}$		---	-5.1	---	mV/℃
Forward Transconductance	gfs	V_{DS}=10V , I_D=2A	---	10	---	S
Dynamic and Switching Characteristics						
Total Gate Charge[3 , 4]	Q_g	V_{GS}=10V , V_{DS}=50V , I_D=10A	---	27.8	55	nC
Gate-Source Charge[3 , 4]	Q_{gs}		---	3.5	7.0	
Gate-Drain Charge[3 , 4]	Q_{gd}		---	8.8	17	
Turn-On Delay Time[3 , 4]	$T_{d(on)}$	V_{GS}=10V , V_{DD}=50V , R_G=6Ω , I_D=1A	---	14.2	28	ns
Rise Time[3 , 4]	T_r		---	20.8	42	
Turn-Off Delay Time[3 , 4]	$T_{d(off)}$		---	42	84	
Fall Time[3 , 4]	T_f		---	30	60	
Input Capacitance	C_{iss}	V_{GS}=0V , V_{DS}=50V , F=1MHz	---	1640	3280	pF
Output Capacitance	C_{oss}		---	240	480	
Reverse Transfer Capacitance	C_{rss}		---	4.0	10	
Gate resistance	R_g	V_{GS}=0V,V_{DS}=0V,F=1MHz	---	1.14	---	Ω
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current	I_S	V_G=V_D=0V,Force Current	---	---	50	A
Pulsed Source Current	I_{SM}		---	---	100	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V , I_S=1A , T_J=25℃	---	---	1.0	V
Reverse Recovery Time[3]	t_{rr}	V_{GS}=0V , I_S=10A , dI/dt=100A/μs , T_J=25℃	---	43.5	---	ns
Reverse Recovery Charge[3]	Q_{rr}		---	59.6	---	nC

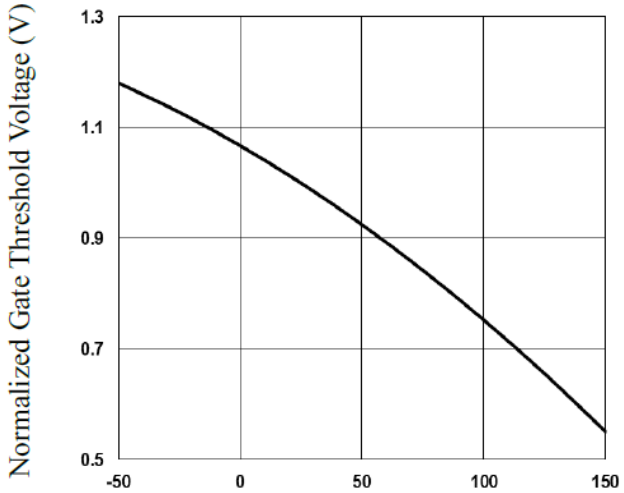
Note :
1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. V_{GS}=10V , V_{DD}=50V , L=0.1mH , I_{AS}=48A , R_G=25Ω , Starting T_J=25℃.
3. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
4. Essentially independent of operating temperature.



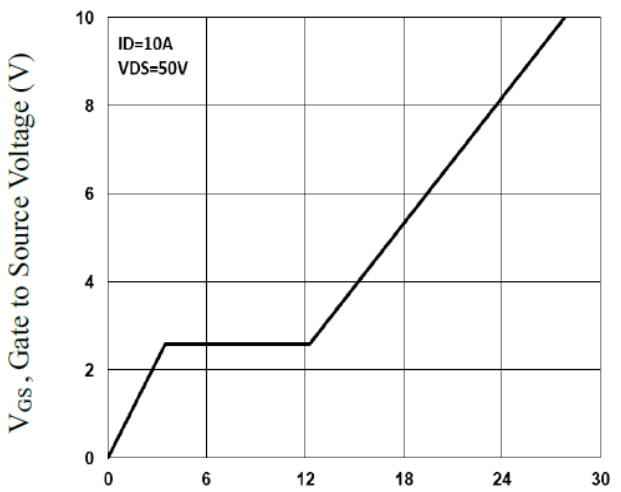
Continuous Drain Current vs. T_C



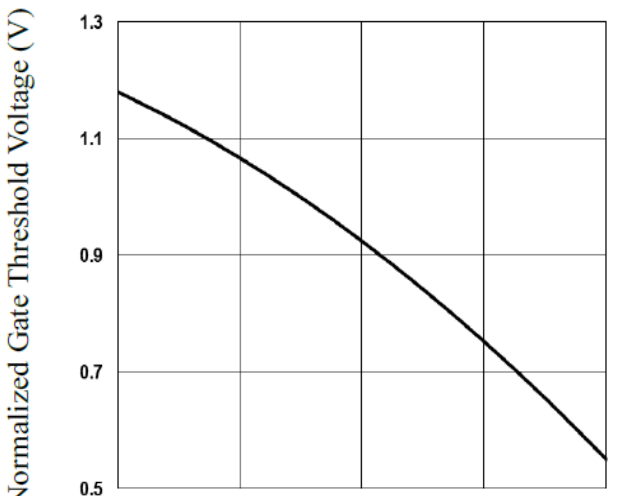
Normalized $R_{DS(ON)}$ vs. T_J



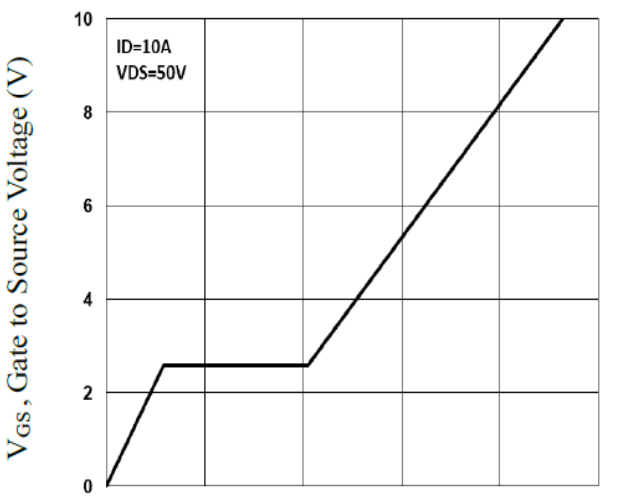
Normalized V_{th} vs. T_J



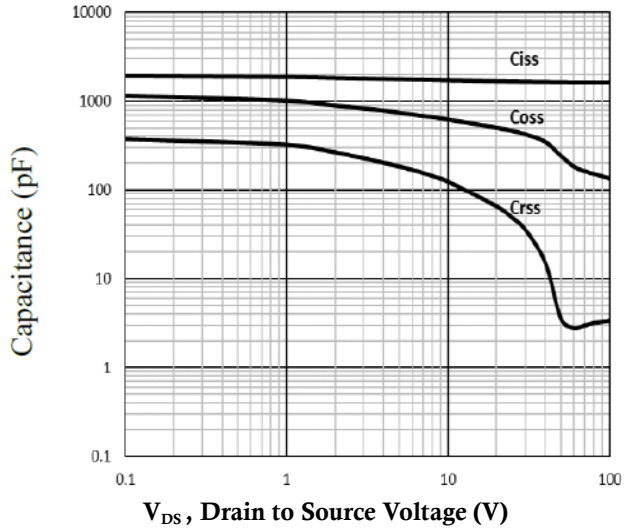
Gate Charge Characteristics



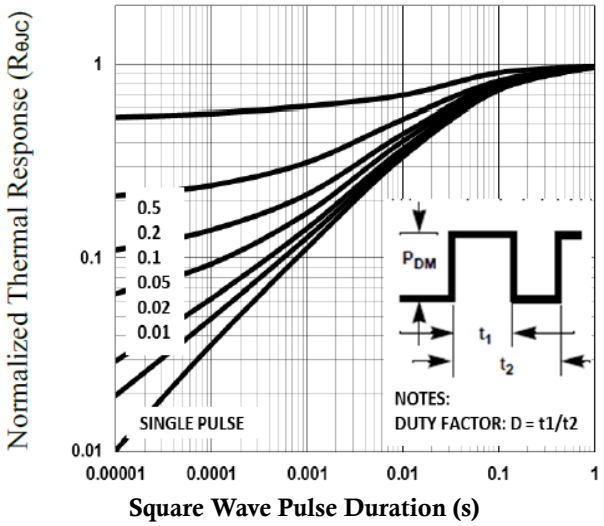
Typical Output Characteristics



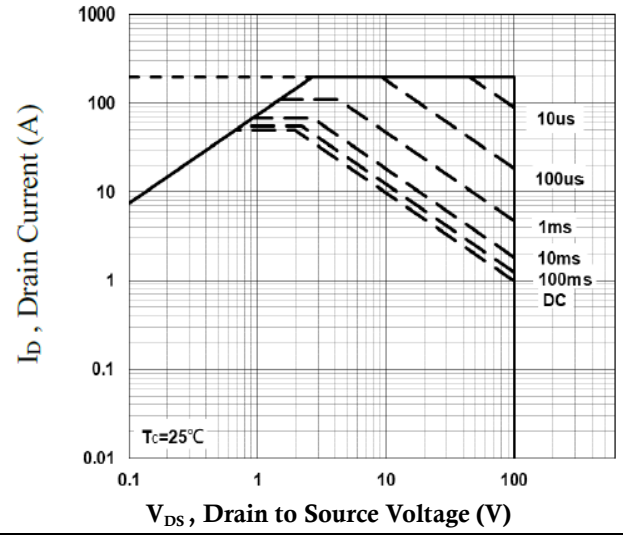
Turn-On Resistance vs. I_D



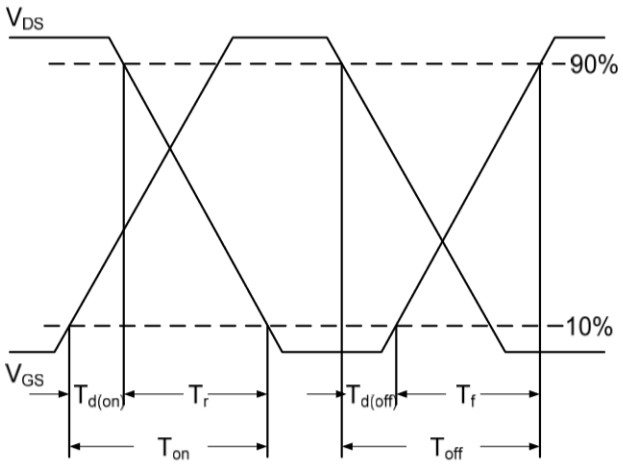
Capacitance Characteristics



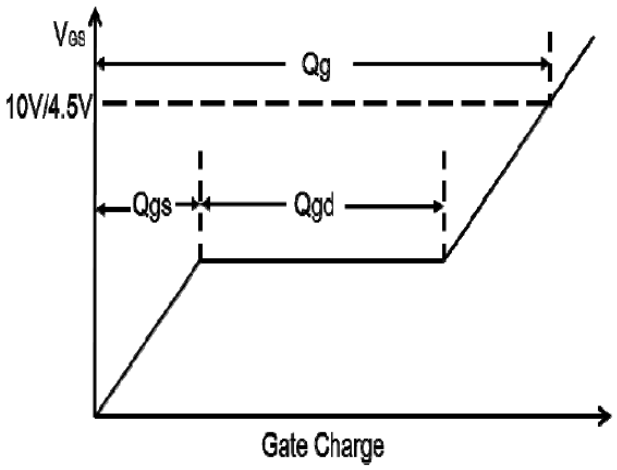
Normalized Transient Impedance



Maximum Safe Operation Area

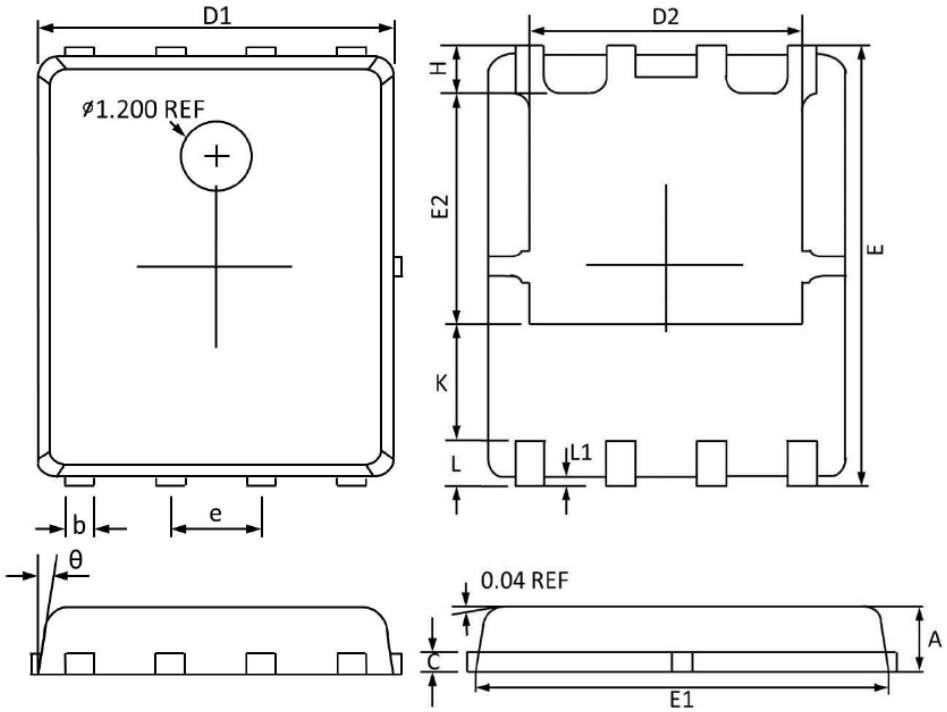


Switching Time Waveform



Gate Charge Waveform

PPAK5X6 PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	1.100	0.800	0.043	0.031
b	0.510	0.330	0.020	0.013
C	0.300	0.200	0.012	0.008
D1	5.100	4.800	0.201	0.189
D2	4.100	3.610	0.161	0.142
E	6.200	5.900	0.244	0.232
E1	5.900	5.700	0.232	0.224
E2	3.780	3.350	0.149	0.132
e	1.270(BSC)		0.050(BSC)	
H	0.700	0.410	0.028	0.016
K	1.500	1.100	0.059	0.043
L	0.710	0.510	0.028	0.020
L1	0.200	0.060	0.008	0.002
θ	12°	0°	12°	0°