

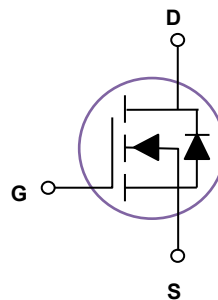
General Description

These N-Channel enhancement mode power field effect transistors are using SGT technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.

Features

V_{DS}	100V
I_D (at $V_{GS}=10V$)	117A
$R_{DS(ON)}$ (at $V_{GS}=10V$)	3.3m Ω (Typ)

PDFN5x6



Absolute Maximum Ratings $T_A=25^{\circ}C$ unless otherwise noted

Parameter		Symbol	Maximum	Units
Drain-Source Voltage		V _{DS}	100	V
Gate-Source Voltage		V _{GS}	±20	V
Drain Current-Continuous	TC=25°C	I _D	117	A
	TC=100°C	I _D	74	A
Maximum Power Dissipation		P _D	104	W
Single pulse avalanche energy ⁽¹⁾		E _{AS}	205	mJ
Junction and Storage Temperature Range		T _J ,T _{STG}	-55 To 150	°C

Thermal Characteristics

Parameter	Symbol	Typ	Max	Unit
Thermal Resistance junction-case	$R_{\theta JC}$		1.2	$^{\circ}C/W$
Thermal Resistance junction-to-Ambient	$R_{\theta JA}$		58	$^{\circ}C/W$

Electrical Characteristics (T_J=25°C unless otherwise noted)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
STATIC PARAMETERS						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V I _D =250μA	100			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =100V, V _{GS} =0V			1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±20V, V _{DS} =0V			±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	1.0	1.8	2.5	V
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =10V, I _D =50A		3.3	3.9	mΩ
		V _{GS} =4.5V, I _D =25A		4.3	5.5	mΩ
DYNAMIC PARAMETERS						
C _{iss}	Input Capacitance	V _{DS} =50V, V _{GS} =0V, F=1.0MHz		3700		pF
C _{oss}	Output Capacitance			877		pF
C _{rss}	Reverse Transfer Capacitance			6.7		pF
SWITCHING PARAMETERS						
t _{d(on)}	Turn-on Delay Time	V _{DD} =50V, I _D =1A, V _{GS} =10V, R _G =6Ω		11		nS
t _r	Turn-on Rise Time			18		nS
t _{d(off)}	Turn-Off Delay Time			46		nS
t _f	Turn-Off Fall Time			36		nS
Q _g	Total Gate Charge	V _{DS} =50V, I _D =20A, V _{GS} =10V		62		nC
Q _{gs}	Gate-Source Charge			8.8		nC
Q _{gd}	Gate-Drain Charge			14.3		nC
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz		2.4		Ω
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _{SD} =1A		0.72	1.4	V

Note:

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. V_{DD}=50V, V_{GS}=10V, L=0.5mH, I_{AS}=50A., Starting T_J=25°C
3. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
4. Essentially independent of operating temperature.

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

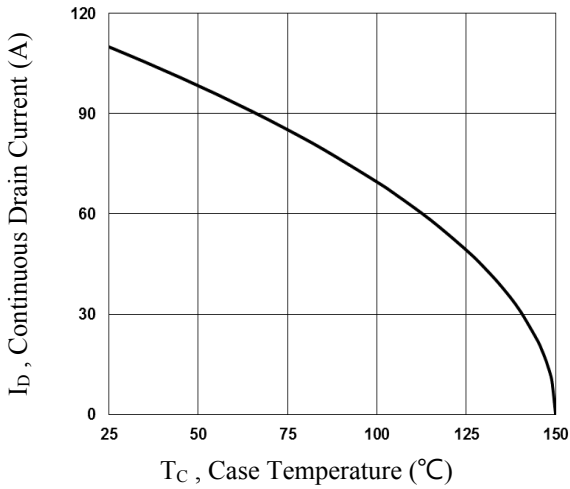


Fig.1 Continuous Drain Current vs. T_c

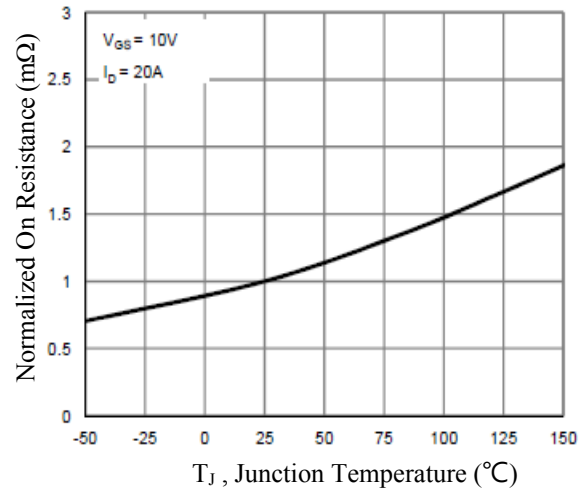


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

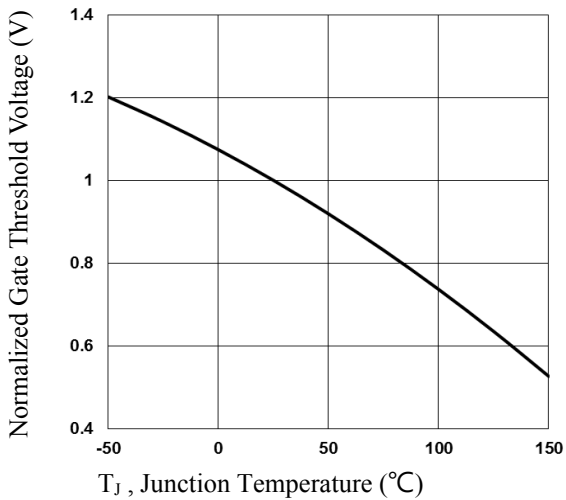


Fig.3 Normalized V_{th} vs. T_J

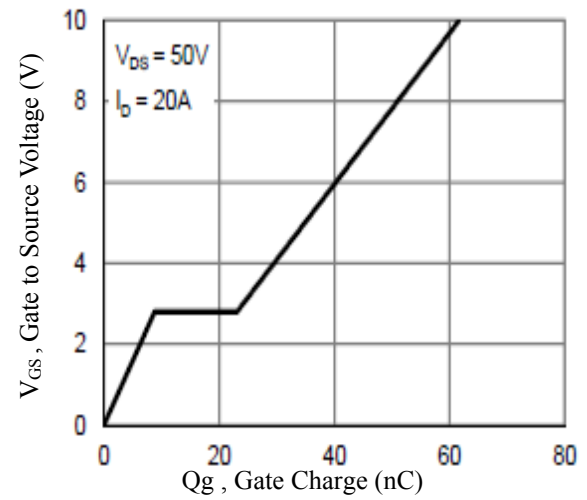


Fig.4 Gate Charge Characteristics

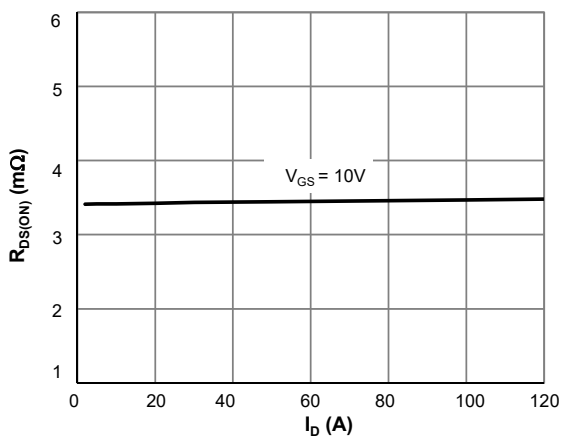


Fig.5 $R_{DS(on)}$ vs. Drain Current

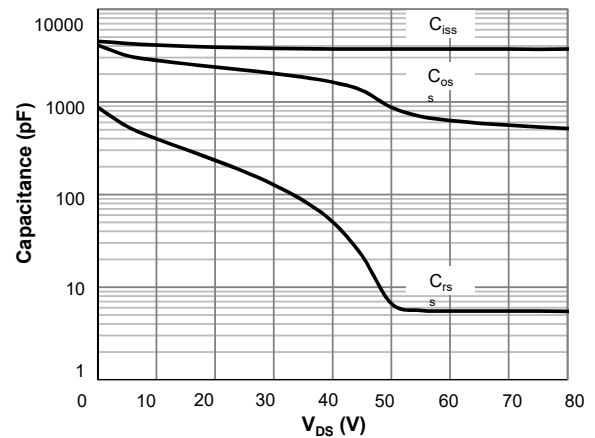


Figure 6: Capacitance Characteristics

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

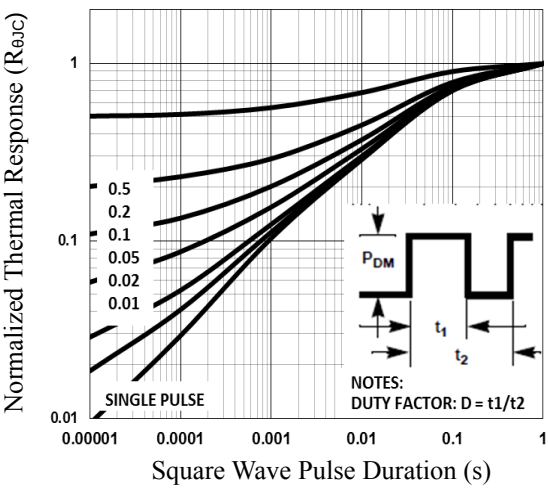


Fig.7 Normalized Transient Impedance

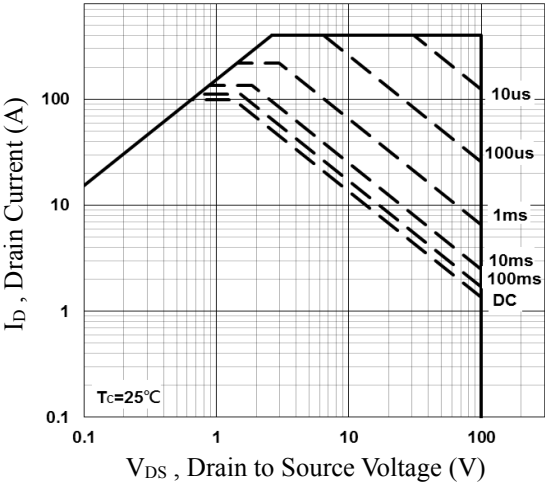


Fig.8 Maximum Safe Operation Area

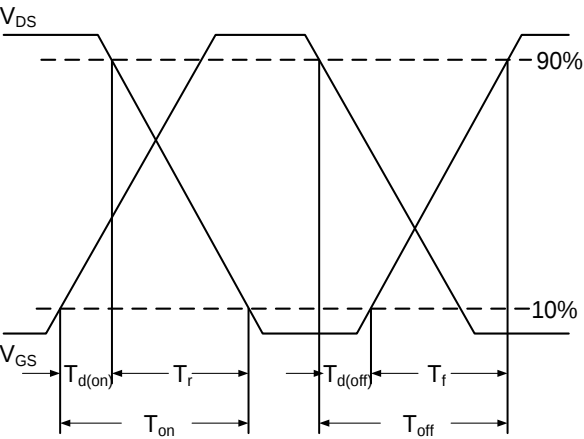


Fig.9 Switching Time Waveform

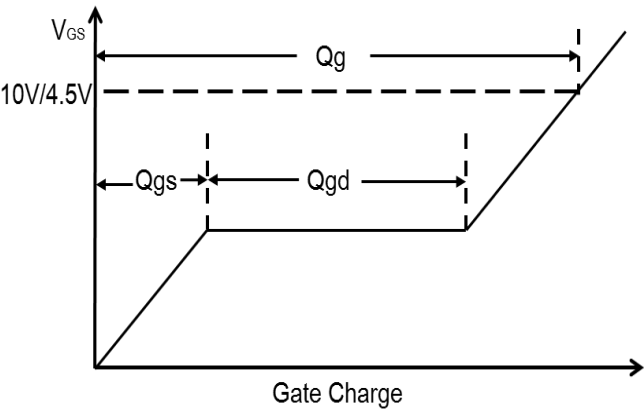
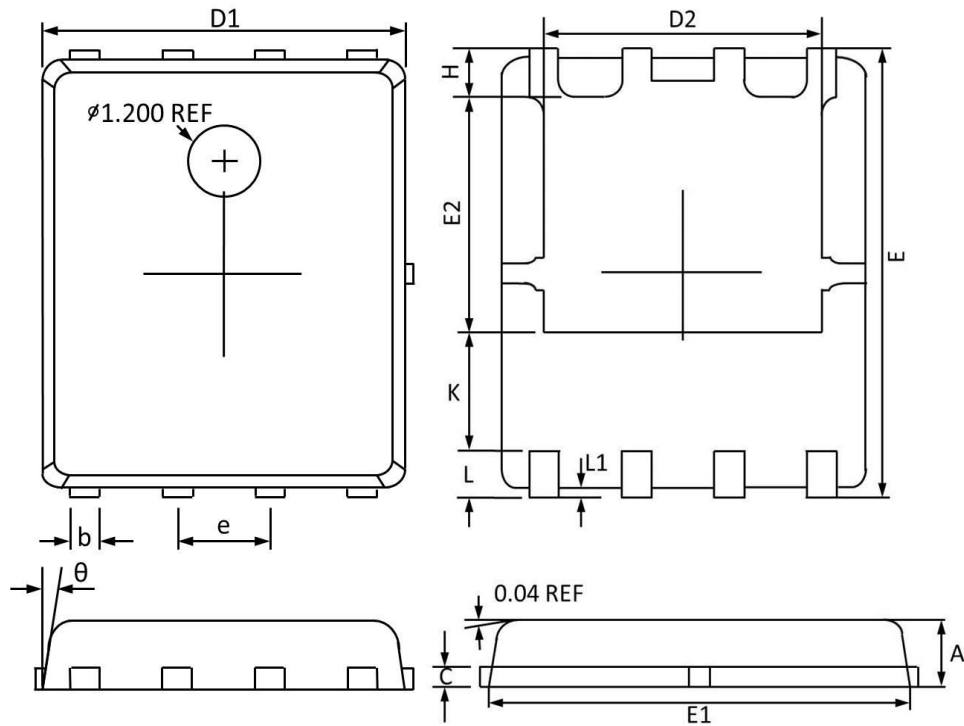


Fig.10 Gate Charge Waveform

PDFN5x6 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	1.27BSC		0.05BSC	
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°