

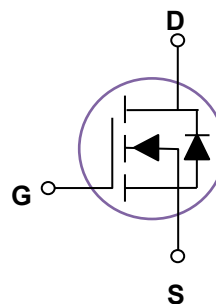
General Description

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 $V_{GS}=10V$)	75A
$R_{DS(ON)}$ (at $V_{GS}=10V$)	6.4m 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 $^{\circ}C$	I_D	75	A
	TC=100 $^{\circ}C$	I_D	47	A
Maximum Power Dissipation		P_D	125	W
Single pulse avalanche energy ⁽¹⁾		E_{AS}	320	mJ
Junction and Storage Temperature Range		T_J, T_{STG}	-55 To 150	$^{\circ}C$

Thermal Characteristics

Parameter	Symbol	Typ	Max	Unit
Thermal Resistance junction-case	$R_{\theta JC}$		1	$^{\circ}C/W$
Thermal Resistance junction-to-Ambient	$R_{\theta JA}$		62	$^{\circ}C/W$

Electrical Characteristics (TJ=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	2.0	3.0	4.0	V
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =10V, I _D =15A		6.4	7.6	mΩ
DYNAMIC PARAMETERS						
C _{iss}	Input Capacitance	V _{DS} =50V,V _{GS} =0V, F=1.0MHz		1990		pF
C _{oss}	Output Capacitance			370		pF
C _{rss}	Reverse Transfer Capacitance			10		pF
SWITCHING PARAMETERS						
t _{d(on)}	Turn-on Delay Time	V _{DD} =50V,I _D =1A, V _{GS} =10V, R _G =6Ω		14.5		nS
t _r	Turn-on Rise Time			21.5		nS
t _{d(off)}	Turn-Off Delay Time			54		nS
t _f	Turn-Off Fall Time			84		nS
Q _g	Total Gate Charge	V _{DS} =50V,I _D =8.5A, V _{GS} =10V		39.5		nC
Q _{gs}	Gate-Source Charge			4.4		nC
Q _{gd}	Gate-Drain Charge			12.3		nC
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz		1.2		Ω
V _{SD}	Diode Forward Voltage	V _{GS} =0V,I _{SD} =1A		0.7	1.2	V

Note:

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. $V_{DD}=50V, V_{GS}=10V, L=0.5mH, I_{AS}=40A$, Starting TJ=25°C
3. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
4. Essentially independent of operating temperature.

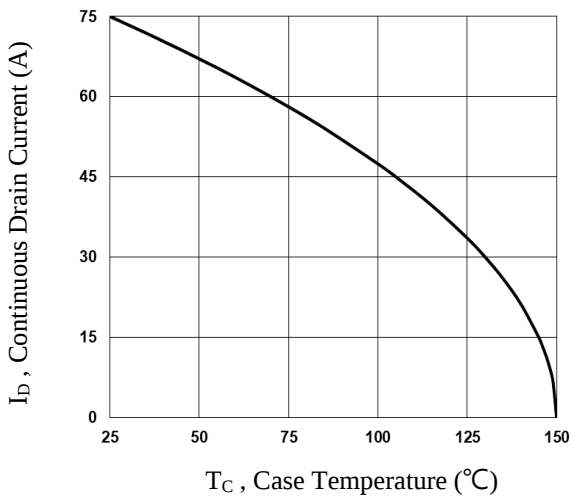


Fig.1 Continuous Drain Current vs. T_C

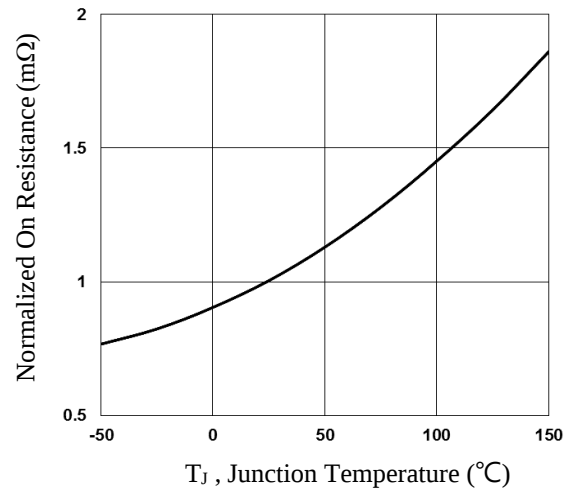


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

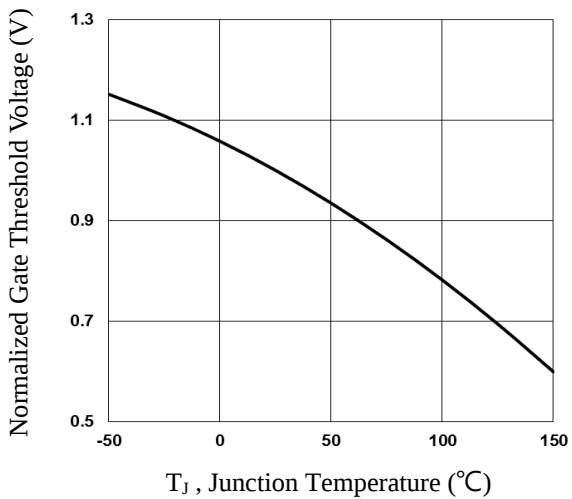


Fig.3 Normalized V_{th} vs. T_J

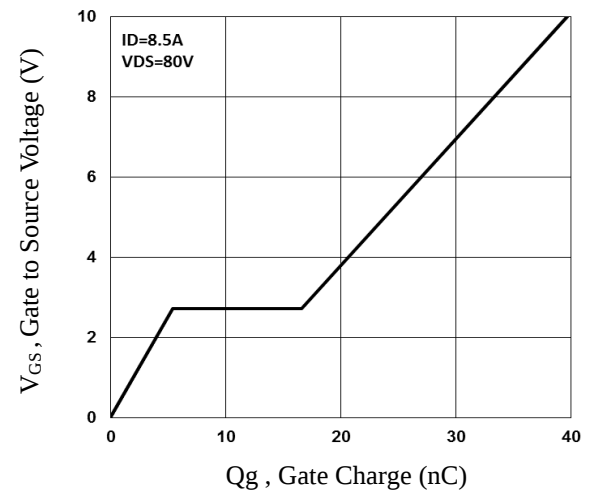


Fig.4 Gate Charge Characteristics

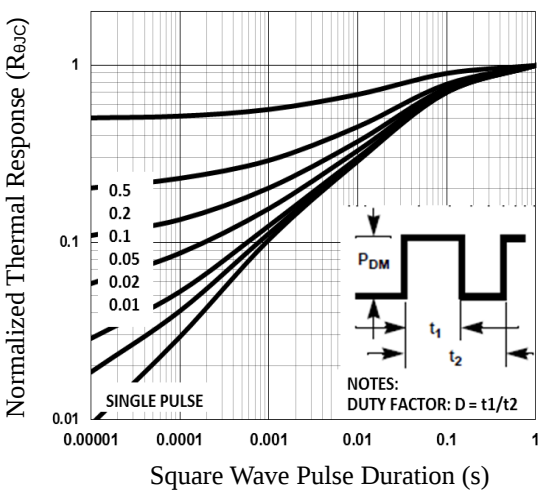


Fig.5 Normalized Transient Impedance

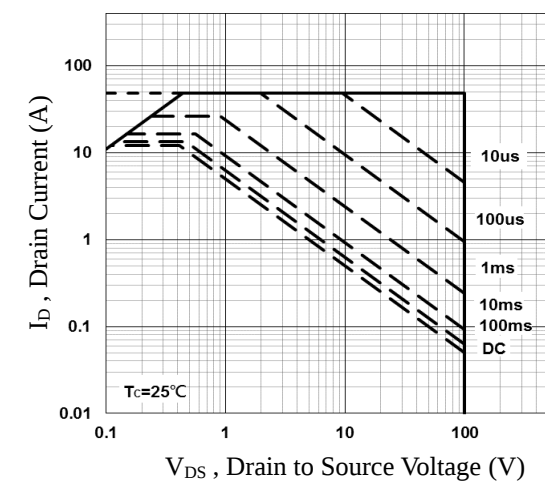


Fig.6 Maximum Safe Operation Area

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

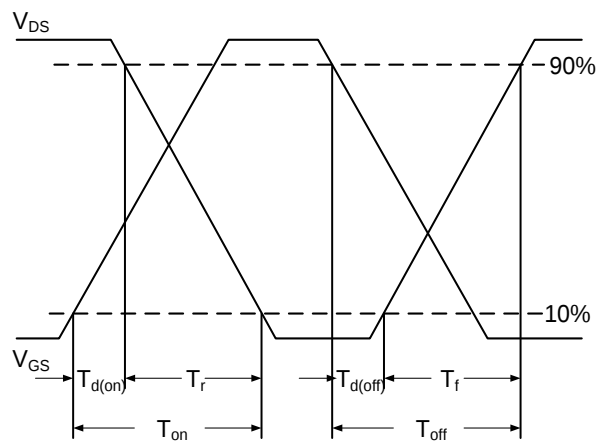


Fig.7 Switching Time Waveform

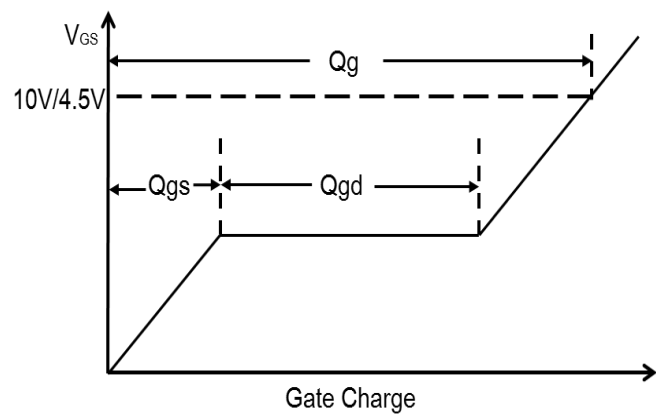
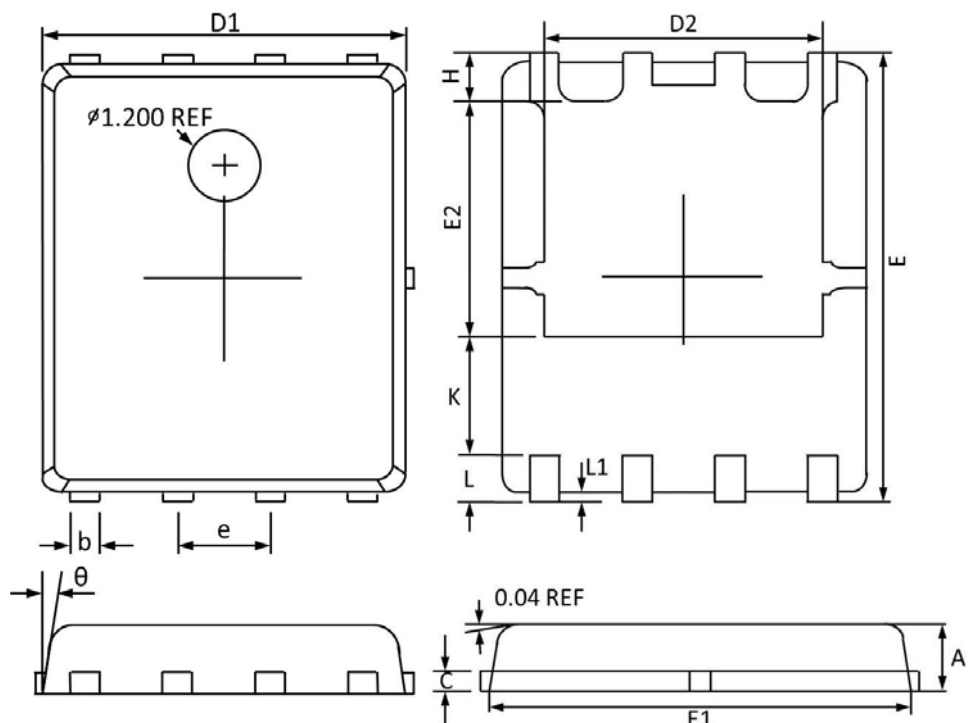


Fig.8 Gate Charge Waveform

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°