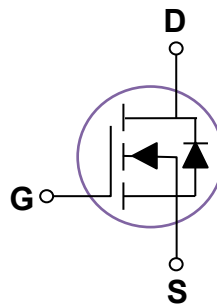
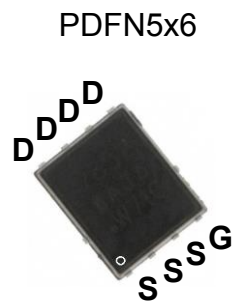


General Description

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}	40V
I_D (at $V_{GS}=10V$)	60A
$R_{DS(ON)}$ (at $V_{GS}=10V$)	4.8m Ω (Typ)



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

Parameter	Symbol	Maximum	Units
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	TC=25 $^{\circ}C$	I_D	60 A
	TC=100 $^{\circ}C$	I_D	36 A
Maximum Power Dissipation	P_D	28	W
Single pulse avalanche energy	E_{AS}	36	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	$R_{\theta Jc}$		1.3	$^{\circ}C/W$
Thermal Resistance junction-to-Ambient	$R_{\theta JA}$		62	$^{\circ}C/W$

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

Symbol	Parameter	Condition	Min	Typ	Max	Unit
STATIC PARAMETERS						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	40			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=40V, V_{GS}=0V$			1	μA
I_{GSS}	Gate-Body Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	1.7	2.5	V
$R_{DS(ON)}$	Drain-Source On-State Resistance	$V_{GS}=10V, I_D=20A$		4.8	6.0	m Ω
		$V_{GS}=4.5V, I_D=15A$		6.5	8.5	m Ω
gfs	Forward Transconductance	$V_{DS}=10V, I_D=40A$		74		S
DYNAMIC PARAMETERS						
C_{ISS}	Input Capacitance	$V_{DS}=20V, V_{GS}=0V,$ $F=1.0MHz$		1200		pF
C_{OSS}	Output Capacitance			530		pF
C_{RSS}	Reverse Transfer Capacitance			51		pF
SWITCHING PARAMETERS						
$t_{d(on)}$	Turn-on Delay Time	$V_{DD}=20V, I_D=40A,$ $V_{GS}=10V,$ $R_G=3\Omega$		5		nS
t_r	Turn-on Rise Time			8.6		nS
$t_{d(off)}$	Turn-Off Delay Time			23		nS
t_f	Turn-Off Fall Time			15		nS
Q_g	Total Gate Charge	$V_{DS}=20V, I_D=40A,$ $V_{GS}=10V$		18		nC
Q_{gs}	Gate-Source Charge			9.6		nC
Q_{gd}	Gate-Drain Charge			3.5		nC
V_{SD}	Diode Forward Voltage	$V_{GS}=0V, I_{SD}=1A$		0.72	1.3	V
R_g	Gate resistance	$V_{GS}=0V, V_{DS}=0V,$ $F=1MHz$		1.8		Ω

Note:

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. $V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=40A$, Starting T_J=25°C
3. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
4. Essentially independent of operating temperature.

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

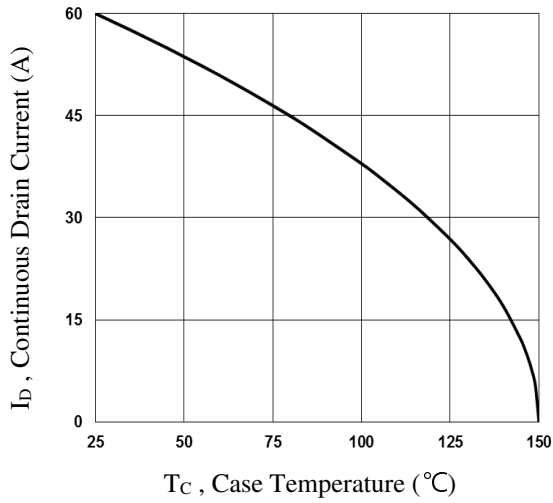


Fig.1 Continuous Drain Current vs. T_c

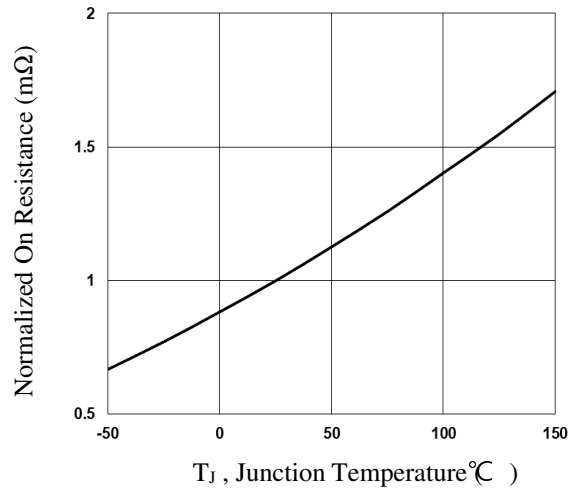


Fig.2 Normalized R_{DS(on)} vs. T_j

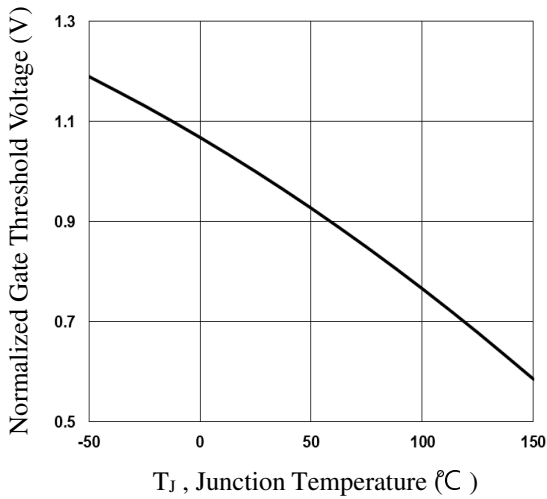


Fig.3 Normalized V_{th} vs. T_j

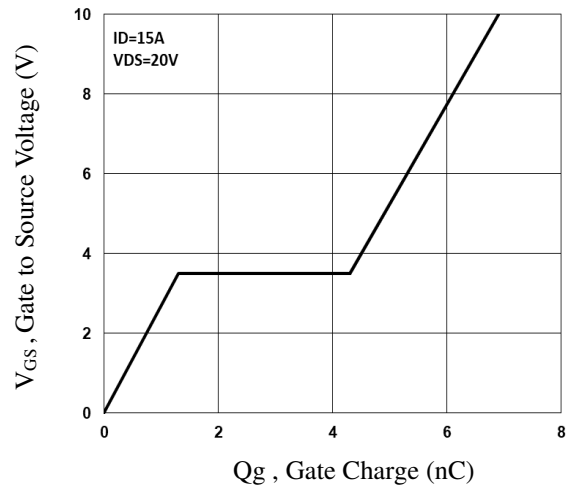


Fig.4 Gate Charge Waveform

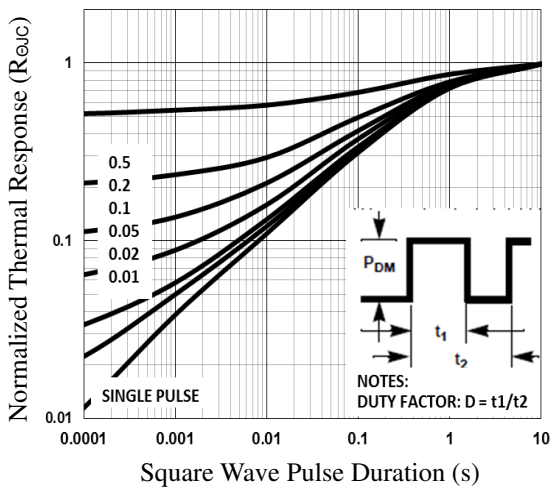


Fig.5 Normalized Transient Response

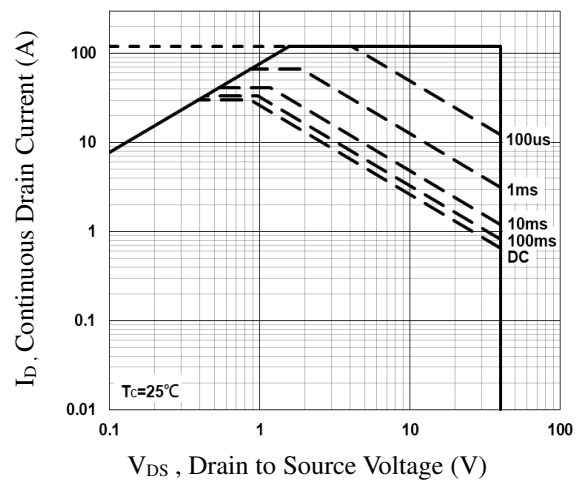


Fig.6 Maximum Safe Operation Area

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

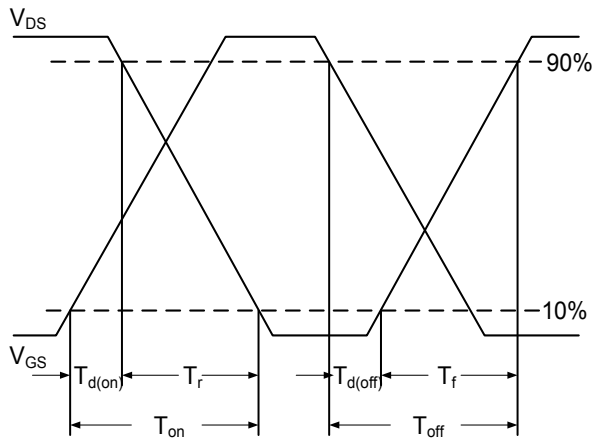


Fig.7 Switching Time Waveform

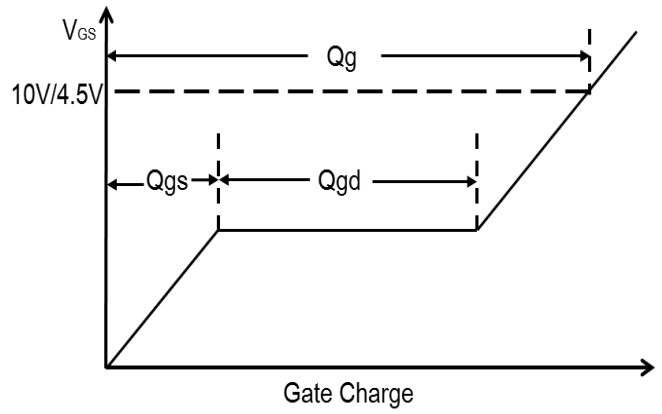
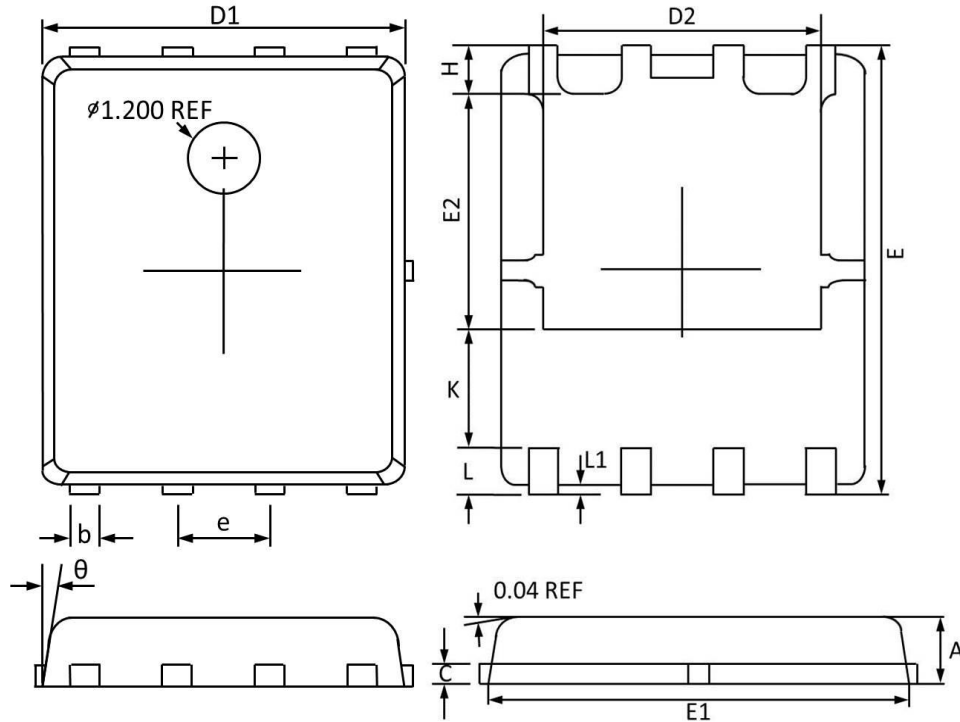


Fig.8 Gate Charge Waveform

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°