

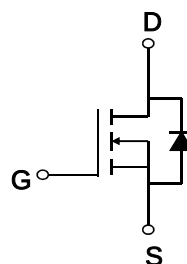
General Description

These N-Channel enhancement mode power field effect transistors are using trench DMOS 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}	65V
I_D (at $V_{GS}=10V$)	44A
$R_{DS(ON)}$ (at $V_{GS}=10V$)	13.6mΩ(Typ)

PDFN5x6



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

Parameter		Symbol	Maximum	Units
Drain-Source Voltage		V_{DS}	65	V
Gate-Source Voltage		V_{GS}	+20/-12	V
Drain Current-Continuous	TC=25°C	I_D	44	A
	TC=100°C	I_D	27	A
Maximum Power Dissipation		P_D	54	W
Drain Current - Pulsed		I_{DM}	176	A
Single pulse avalanche energy		E_{AS}	100	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	$R_{\theta Jc}$		2.3	°C /W
Thermal Resistance junction-to-Ambient	$R_{\theta JA}$		62	°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	65			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =60V,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	1.6	2.5	V
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =10V, I _D =16A		13.6	16	mΩ
		V _{GS} =4.5V, I _D =12A		24	30	mΩ
DYNAMIC PARAMETERS						
C _{iss}	Input Capacitance	V _{DS} =30V,V _{GS} =0V, F=1.0MHz		650		pF
C _{OSS}	Output Capacitance			191		pF
C _{rSS}	Reverse Transfer Capacitance			27		pF
SWITCHING PARAMETERS						
t _{d(on)}	Turn-on Delay Time	V _{DD} =30V,I _D =1A, V _{GS} =10V, R _G =3.3Ω		8		nS
t _r	Turn-on Rise Time			12		nS
t _{d(off)}	Turn-Off Delay Time			25		nS
t _f	Turn-Off Fall Time			18		nS
Q _g	Total Gate Charge	V _{DS} =30V,I _D =12A, V _{GS} =10V		11		nC
Q _{gs}	Gate-Source Charge			1.5		nC
Q _{gd}	Gate-Drain Charge			4.5		nC
V _{SD}	Diode Forward Voltage	V _{GS} =0V,I _{SD} =1A		0.72	1.3	V

Note:

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. $V_{DD}=50V, L=0.5mH, I_{AS}=20A.$, 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.

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

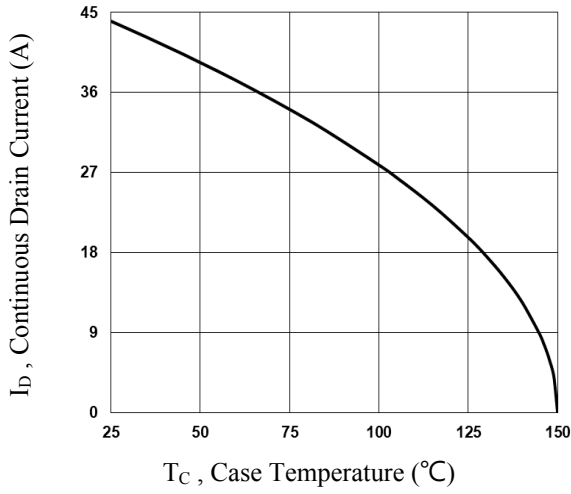


Fig.1 Continuous Drain Current vs. T_C

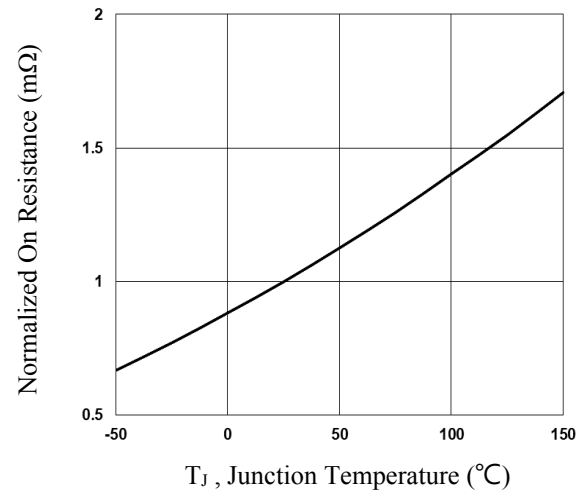


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

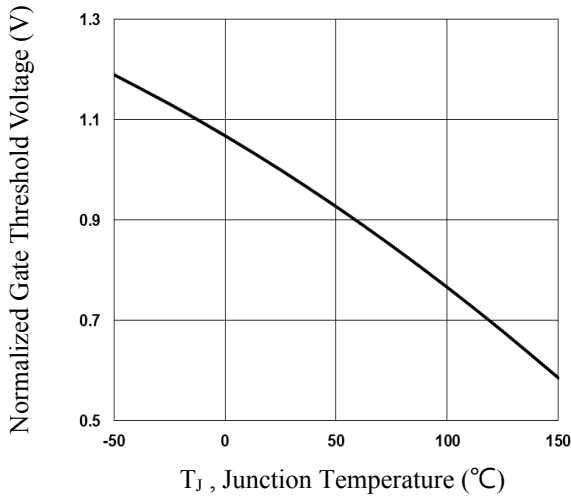


Fig.3 Normalized V_{th} vs. T_J

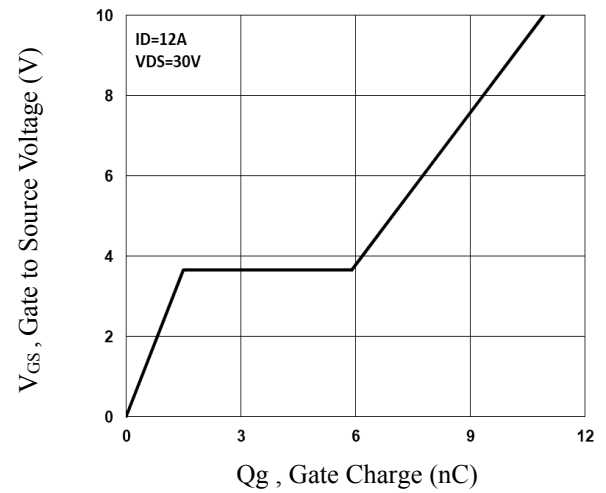


Fig.4 Gate Charge Waveform

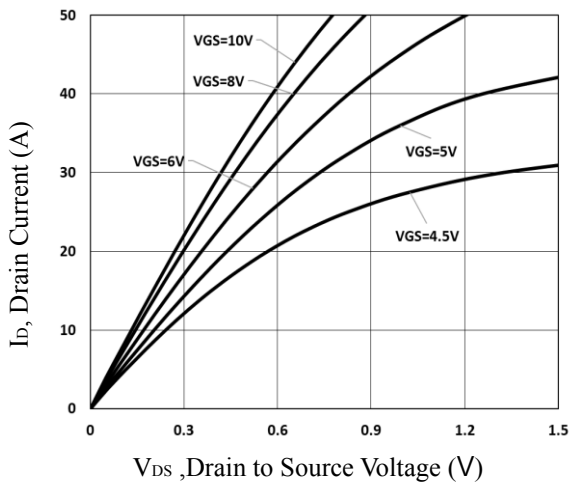


Fig.5 Typical Output Characteristics

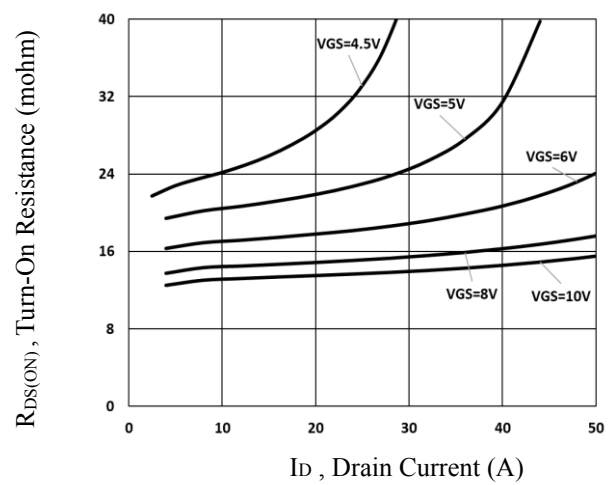


Fig.6 Turn-On Resistance vs. I_D

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

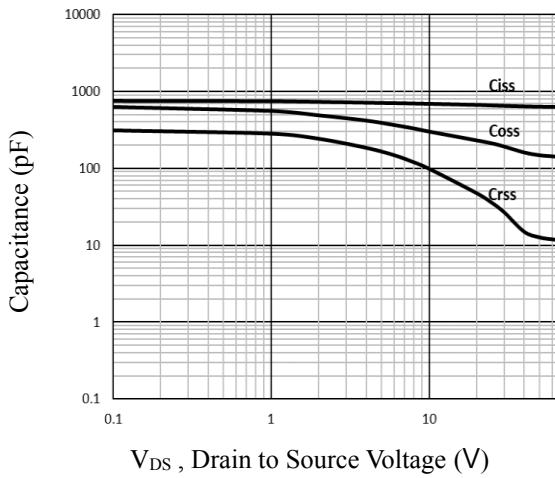


Fig.7 Capacitance Characteristics

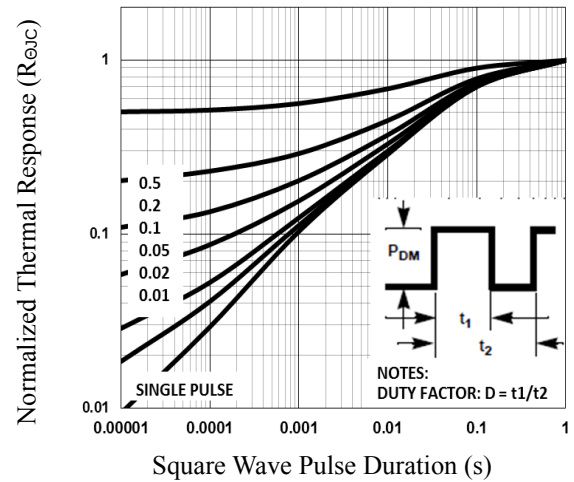


Fig.8 Normalized Transient Response

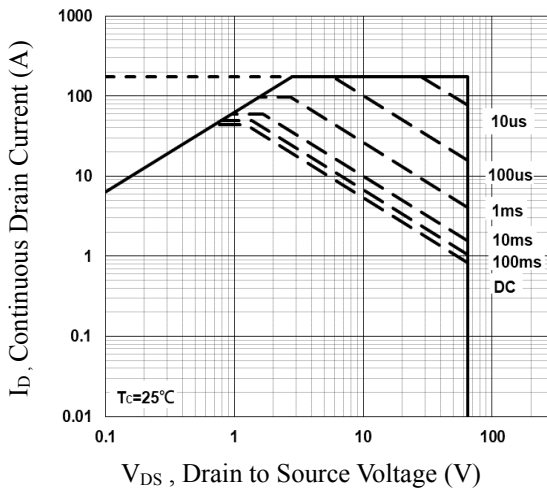


Fig.9 Maximum Safe Operation Area

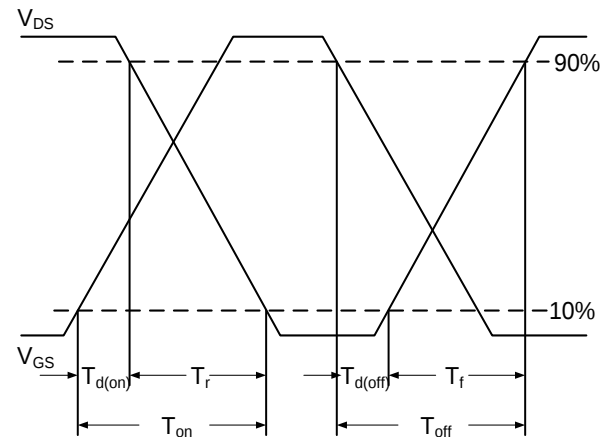


Fig.10 Switching Time Waveform

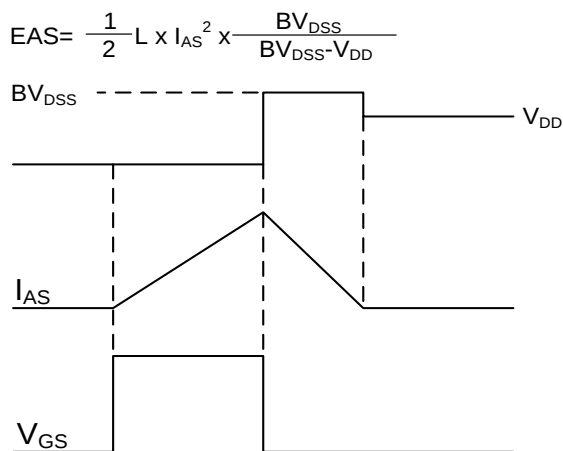
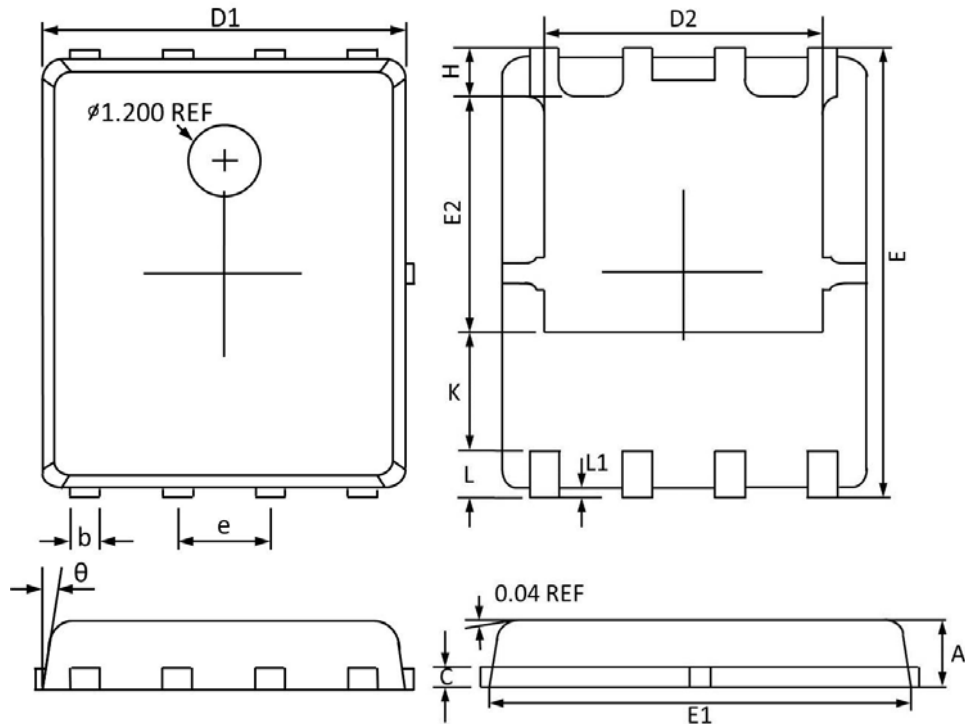


Fig.11 EAS Waveform

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°