

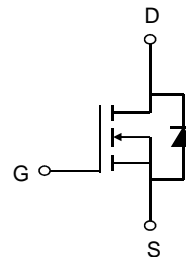
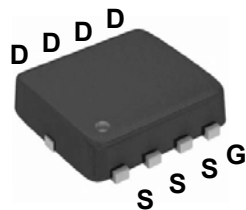
General Description

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}	30V
I_D (at $V_{GS}=10V$)	80A
$R_{DS(ON)}$ (at $V_{GS}=10V$)	2.9m Ω (Typ)
$R_{DS(ON)}$ (at $V_{GS}=4.5V$)	4.3m Ω (Typ)

PDFN3x3



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

Parameter	Symbol	Maximum	Units
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	TC=25 $^\circ C$	I_D	80 A
	TC=100 $^\circ C$	I_D	51 A
Drain Current – Pulsed	I_{DM}	320	A
Single pulse avalanche energy	E_{AS}	125	mJ
Maximum Power Dissipation	P_D	115	W
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	$R_{\theta JC}$		2	$^\circ C/W$
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	$V_{GS}=0V, I_D=250\mu A$	30			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=30V, V_{GS}=0V$			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	1.6	2.5	V
$R_{DS(on)}$	Drain-Source On-State esistance	$V_{GS}=10V, I_D=20A$		2.9	3.8	m Ω
		$V_{GS}=4.5V, I_D=10A$		4.3	5.5	m Ω
DYNAMIC PARAMETERS						
C_{iss}	Input Capacitance	$V_{DS}=25V, V_{GS}=0V,$ $F=1.0MHz$		2200		pF
C_{oss}	Output Capacitance			280		pF
C_{rSS}	Reverse Transfer Capacitance			180		pF
SWITCHING PARAMETERS						
$t_{d(on)}$	Turn-on Delay Time	$V_{GS}=10V$ $V_{DS}=15V$ $I_D=15A$ $R_{GEN}=3\Omega$		12.6		nS
t_r	Turn-on Rise Time			19.5		nS
$t_{d(off)}$	Turn-Off Delay Time			42.5		nS
t_f	Turn-Off Fall Time			13		nS
Q_g	Total Gate Charge	$V_{DS}=15V, I_D=4.5A,$ $V_{GS}=4.5V$		24		nC
Q_{gs}	Gate-Source Charge			4.2		nC
Q_{gd}	Gate-Drain Charge			13		nC
V_{SD}	Diode Forward Voltage	$V_{GS}=0V, I_{SD}=1A$		0.72	1.3	V
R_g	Gate resistance	$V_{GS}=0V, V_{DS}=0V,$ $F=1MHz$		2.0		Ω

Note:

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
3. Essentially independent of operating temperature.

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

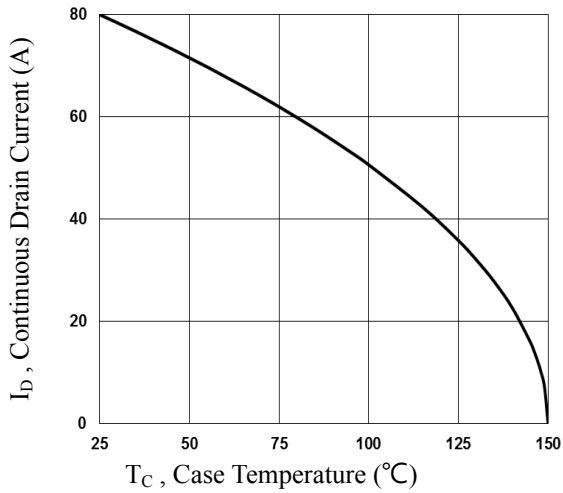


Fig.1 Continuous Drain Current vs. T_C

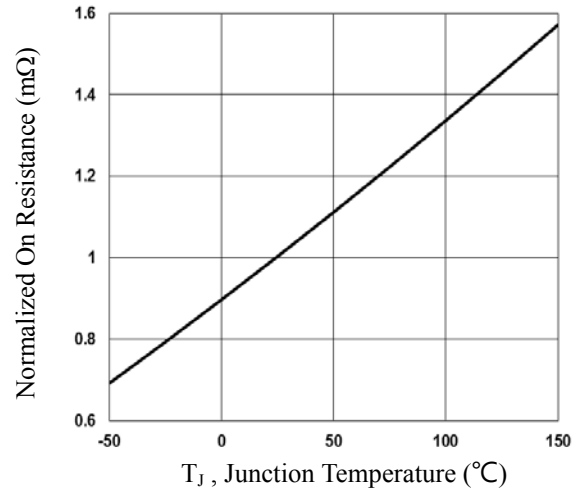


Fig.2 Normalized R_{DS(on)} vs. T_J

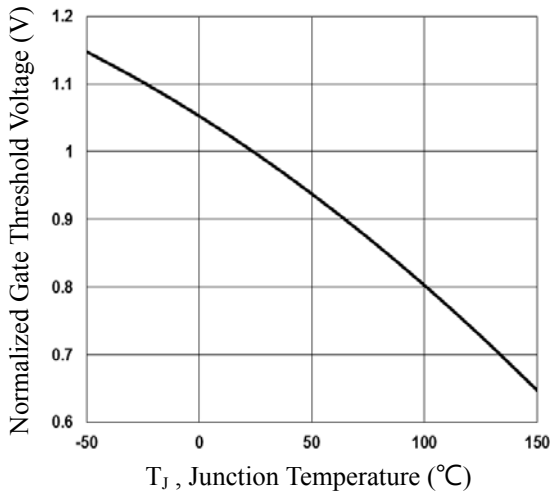


Fig.3 Normalized V_{th} vs. T_J

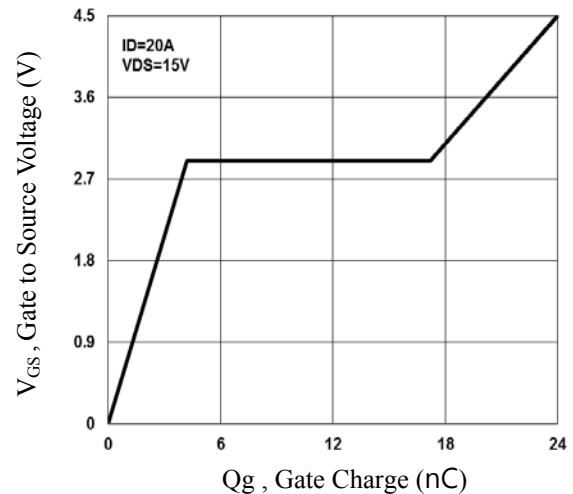


Fig.4 Gate Charge Waveform

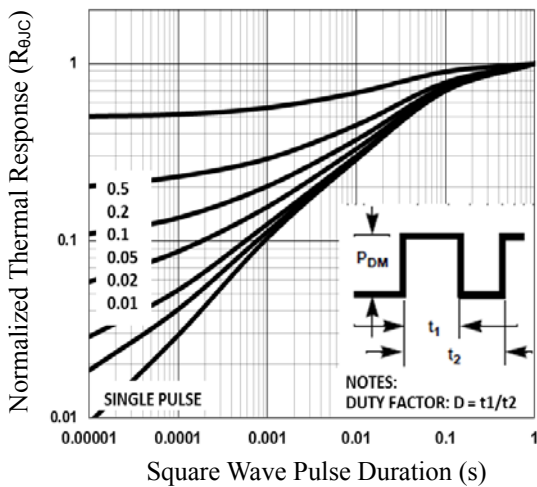


Fig.5 Normalized Transient Impedance

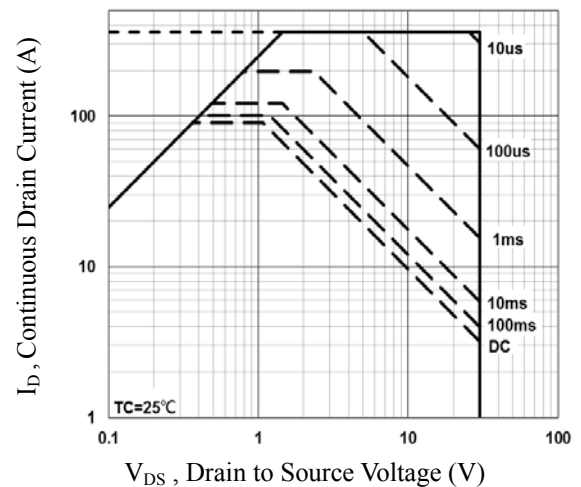


Fig.6 Maximum Safe Operation Area

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

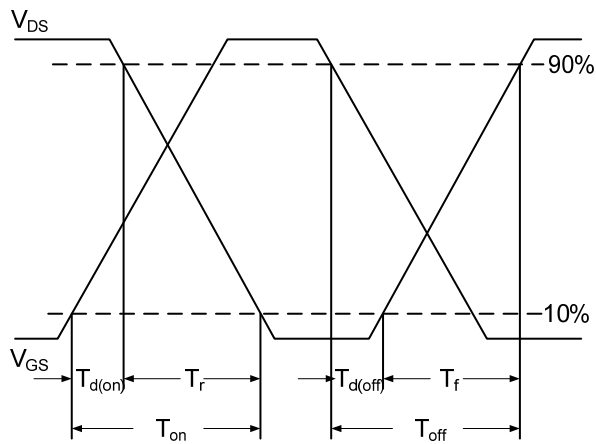


Fig.7 Switching Time Waveform

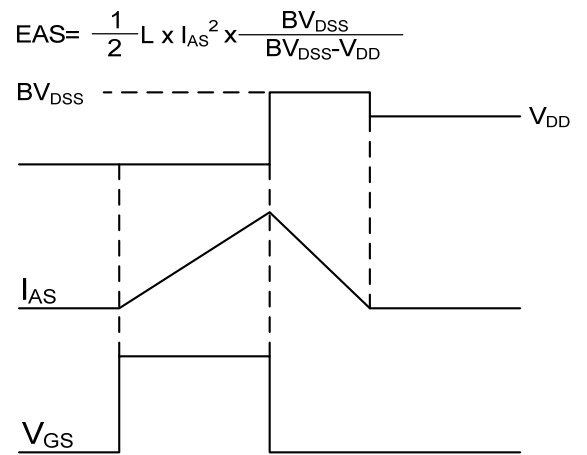
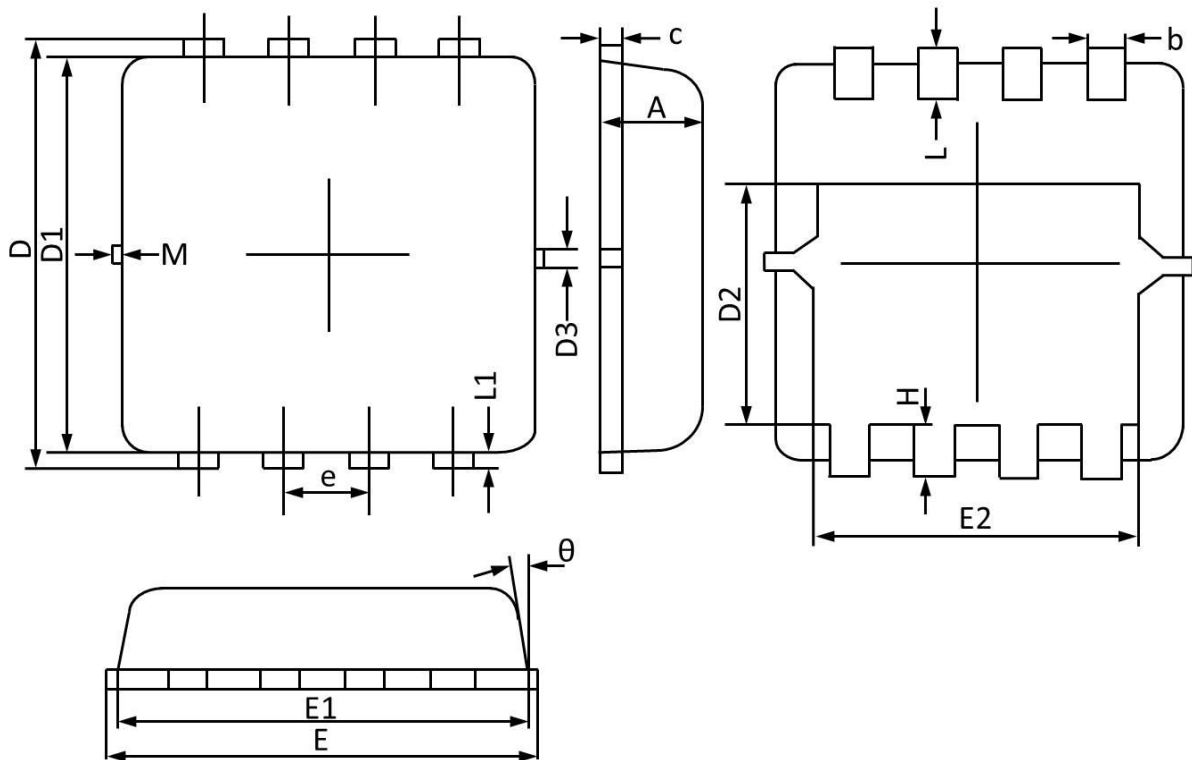


Fig.8 EAS Waveform

PDFN3x3 PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.700	0.800	0.028	0.031
b	0.250	0.350	0.010	0.013
c	0.100	0.250	0.004	0.009
D	3.250	3.450	0.128	0.135
D1	3.000	3.200	0.119	0.125
D2	1.780	1.980	0.070	0.077
D3	0.130 REF		0.005 REF	
E	3.200	3.400	0.126	0.133
E1	3.000	3.200	0.119	0.125
E2	2.390	2.590	0.094	0.102
e	0.650 BSC		0.026 BSC	
H	0.300	0.500	0.011	0.019
L	0.300	0.500	0.011	0.019
L1	0.130 REF		0.005 REF	
theta	0°	12°	0°	12°
M	0.150 REF		0.006 REF	