

N-channel MOSFET

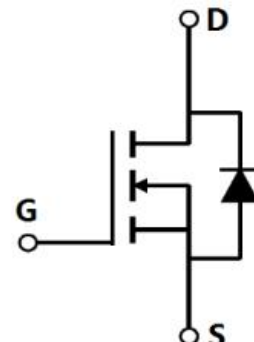
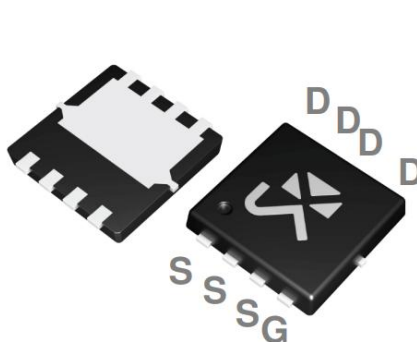
$BV_{DSS}, T_A=25^{\circ}\text{C}$	$I_D, T_A=25^{\circ}\text{C}$	$R_{DS(on)}, \text{typ}@10\text{V}$
100 V	95A	5.5m Ω

Features

- Improved dv/dt capability
- Fast switching
- 100% EAS Guaranteed
- Green Device Available

Applications

- Networking
- Load Switch
- LED applications
- Quick Charger



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.

Absolute Maximum Ratings($T_A=25^{\circ}\text{C}$, unless otherwise noted.)

Parameter		Symbol	Value	Unit
Drain-source Voltage		V_{DS}	100	V
Gate-source Voltage		V_{GS}	± 20	V
Drain Current-Continuous	$T_C=25^{\circ}\text{C}$	I_D	95	A
	$T_C=100^{\circ}\text{C}$		65	A
Pulsed Drain Current ⁽¹⁾		I_{DM}	360	A
Single Pulsed Avalanche Energy ⁽²⁾		E_{AS}	405	mJ
Avalanche Current ⁽²⁾		I_{AS}	90	A
Power Dissipation	$T_C=25^{\circ}\text{C}$	P_D	192	W
	Derate Above 25°C		1.54	W/ $^{\circ}\text{C}$
Operating Junction Temperature Range		T_J	-55~150	$^{\circ}\text{C}$
Storage Temperature Range		T_{STG}	-55~150	$^{\circ}\text{C}$

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance Junction to ambient, Max.	$R_{\theta JA}$	62	$^{\circ}\text{C}/\text{W}$
Thermal Resistance, Junction to Case, Max.	$R_{\theta JC}$	0.65	$^{\circ}\text{C}/\text{W}$

Electrical Characteristics($T_J=25^{\circ}\text{C}$, unless otherwise noted.)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-source Breakdown voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	100			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =80V, V _{GS} =0V			1	μA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =80V, V _{GS} =0V, T _J =85°C			10	μA
Gate-source leakage current	I _{GSS}	V _{GS} =+20V, V _{DS} =0V			100	nA
		V _{GS} =-20V, V _{DS} =0V			-100	nA
On Characteristics						
Gate Threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.2	3.0	4.5	V
Static Drain to Source on resistance ⁽³⁾	R _{DS(on)}	V _{GS} = 10V, I _D = 20A		5.5	8.5	mΩ
Forward Transconductance	g _{fs}	V _{GS} = 10V, I _D = 3A		22		S
Dynamic Characteristics And Switching Characteristics						
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V, f=1MHz		3827	6000	pF
Output Capacitance	C _{oss}			750	1150	pF
Reverse Capacitance	C _{rss}			10	15	pF
Total Gate Charge ^(3,4)	Q _g	V _{DS} = 50V, I _D = 70A, V _{GS} = 10V		65	100	nC
Gate to Source Charge ^(3,4)	Q _{gs}			9.5	15	nC
Gate to Drain Charge ^(3,4)	Q _{gd}			14	21	nC
Internal Gate Resistance	R _G	f=1MHz, V _{DS} =0V ,V _{GS} =0V		1.8		Ω
Turn-On Delay Time ^(3,4)	td(on)	V _{GS} = 10V, V _{DD} = 50V, R _G = 6Ω, I _D = 70A		24	36	nS
Turn-On Rise Time ^(3,4)	tr			20	30	nS
Turn-Off Delay Time ^(3,4)	td(off)			45	70	nS
Turn-Off Fall Time ^(3,4)	tf			25	40	nS
Source-Drain Diode Characteristics						
Continuous Source Current	I _S	V _G = V _D = 0V,Force Current			140	A
Pulsed Source Current	I _{SM}				280	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =1A			1	V
Reverse Recovery Time	trr	V _{GS} =0V, I _S =10A,		210		ns
Reverse Recovery Charge	Qrr	dI _F /dt=100A/μs		490		nC

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. $V_{DD}=50V, V_{GS}=10V, L=0.1mH, I_{AS}=90A, R_G=25, \text{Starting } T_J=25^\circ C.$
3. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
4. Essentially independent of operating temperature.

Typical Characteristics

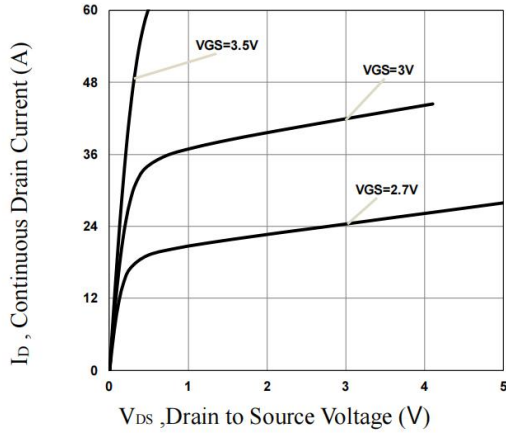


Fig.1 Typical Output Characteristics

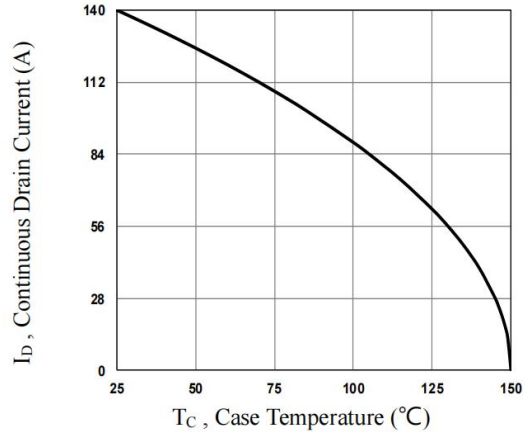


Fig.2 Continuous Drain Current vs. T_C

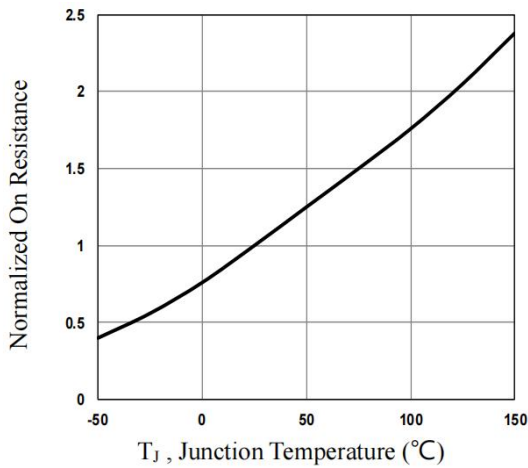


Fig.3 Normalized $R_{DS(on)}$ vs. T_J

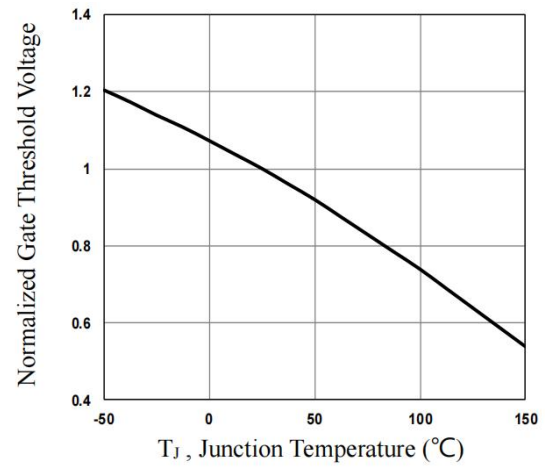


Fig.4 Normalized V_{th} vs. T_J

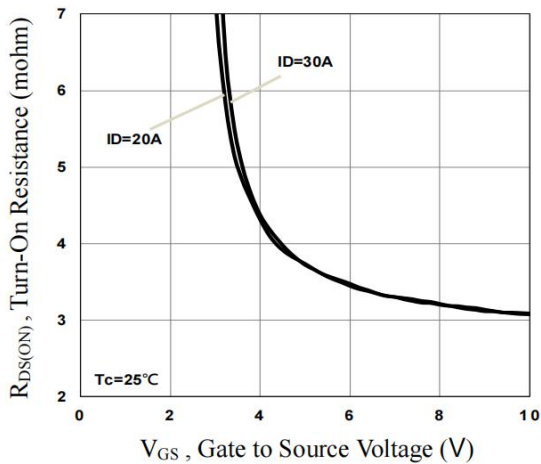


Fig.5 Turn-On Resistance vs. V_{GS}

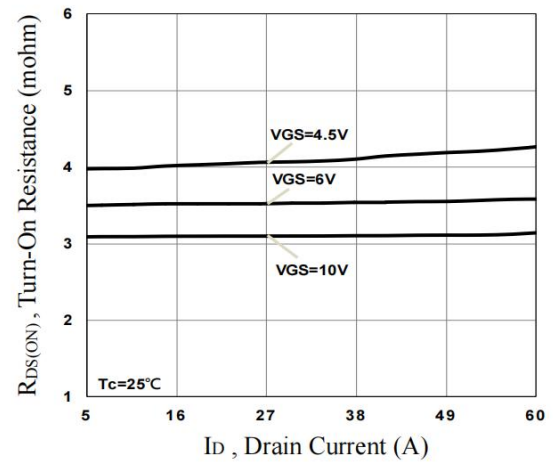


Fig.6 Turn-On Resistance vs. I_D

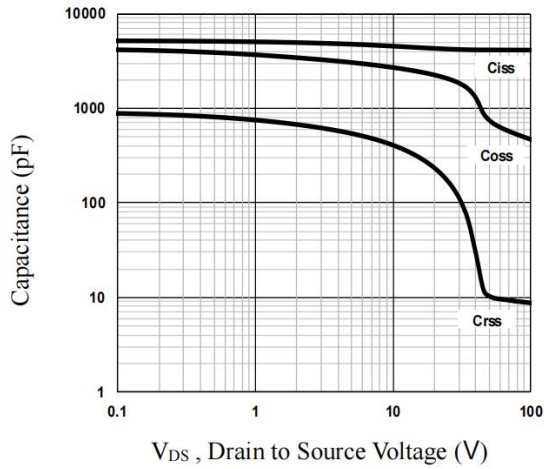


Fig.7 Capacitance Characteristics

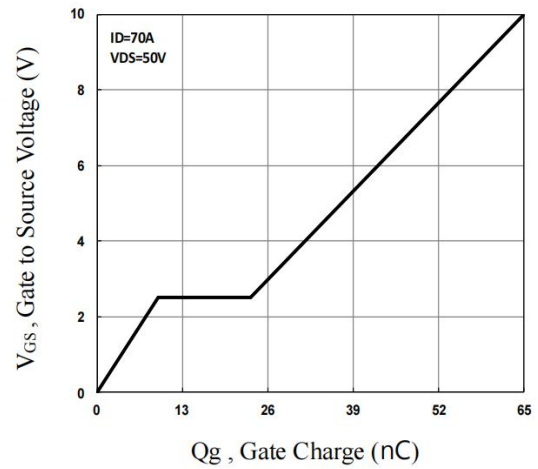


Fig.8 Gate Charge Characteristics

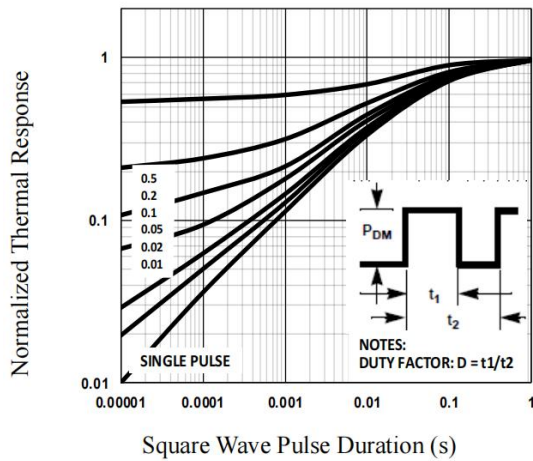


Fig.9 Normalized Transient Impedance

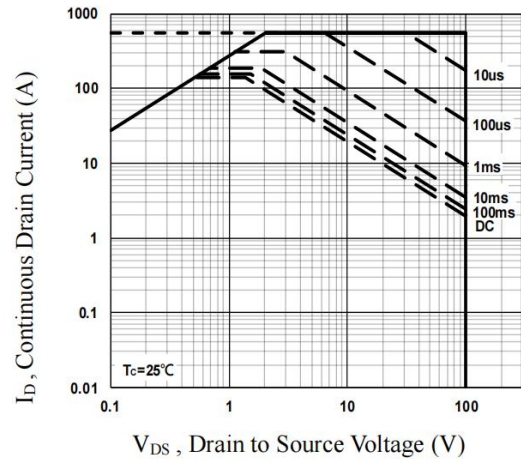


Fig.10 Maximum Safe Operation Area

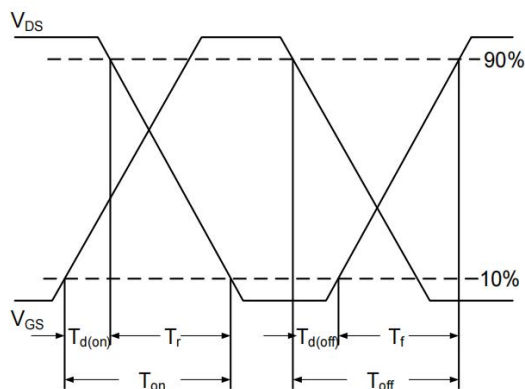


Fig.11 Switching Time Waveform

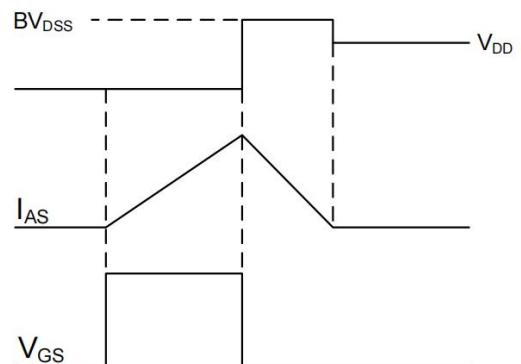
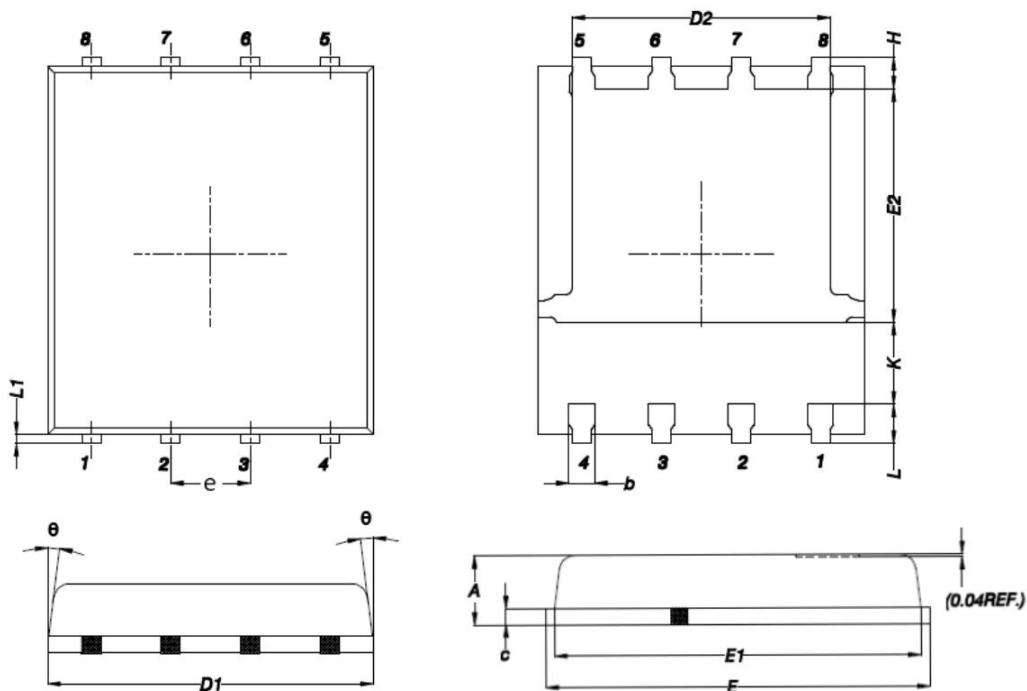


Fig.12 EAS Waveform

Package Information

PDFN 5x6

Dimensions in mm



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	1.200	0.850	0.047	0.031
b	0.510	0.300	0.020	0.012
C	0.300	0.200	0.012	0.008
D1	5.400	4.800	0.212	0.189
D2	4.310	3.610	0.170	0.142
E	6.300	5.850	0.248	0.230
E1	5.960	5.450	0.235	0.215
E2	3.920	3.300	0.154	0.130
e	1.27BSC		0.05BSC	
H	0.650	0.380	0.026	0.015
K	---	1.100	---	0.043
L	0.710	0.380	0.028	0.015
L1	0.250	0.050	0.009	0.002
θ	12°	0°	12°	0°