

Features

- Advanced Trench MOS Technology
- 100% EAS Guaranteed
- Fast Switching Speed
- Green Device Available

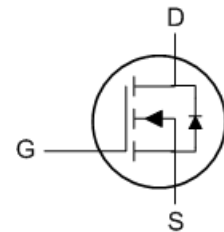
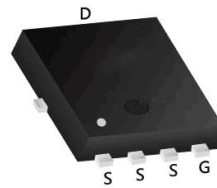
Product Summary

BVDSS	RDSON	ID
100V	7mΩ	82A

Applications

- High Frequency Switching and Synchronous Rectification.
- DC/DC Converters.

DFN5X6 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V^1$	82	A
$I_D@T_C=100^\circ C$	Continuous Drain Current, $V_{GS} @ 10V^1$	52	A
$I_D@T_A=25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V^1$	12.8	A
$I_D@T_A=70^\circ C$	Continuous Drain Current, $V_{GS} @ 10V^1$	10.3	A
I_{DM}	Pulsed Drain Current ²	250	A
EAS	Single Pulse Avalanche Energy ³	186	mJ
I_{AS}	Avalanche Current	61	A
$P_D@T_C=25^\circ C$	Total Power Dissipation ⁴	83	W
$P_D@T_A=25^\circ C$	Total Power Dissipation ⁴	2	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ C$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ¹	---	62	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	---	1.5	$^\circ C/W$

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	100	---	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =20A	---	5.6	7	mΩ
		V _{GS} =4.5V, I _D =20A	---	7.3	9	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	1.2	1.7	2.3	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =80V, V _{GS} =0V, T _J =25°C	---	---	1	uA
		V _{DS} =80V, V _{GS} =0V, T _J =55°C	---	---	5	
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0V	---	---	±100	nA
R _g	Gate Resistance	V _{DS} =0V, V _{GS} =0V, f=1MHz	---	1.5	---	Ω
Q _g	Total Gate Charge	V _{DS} =50V, V _{GS} =4.5V, I _D =20A	---	23.8	---	nC
Q _{gs}	Gate-Source Charge		---	6.5	---	
Q _{gd}	Gate-Drain Charge		---	10.7	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =50V, V _{GS} =10V, R _G =3Ω, I _D =20A	---	8.5	---	ns
T _r	Rise Time		---	5	---	
T _{d(off)}	Turn-Off Delay Time		---	30	---	
T _f	Fall Time		---	4.5	---	
C _{iss}	Input Capacitance	V _{DS} =50V, V _{GS} =0V, f=1MHz	---	2377	---	pF
C _{oss}	Output Capacitance		---	409	---	
C _{rss}	Reverse Transfer Capacitance		---	5	---	
Diode Characteristics						
I _S	Continuous Source Current ^{1,5}	V _G =V _D =0V, Force Current	---	---	82	A
V _{SD}	Diode Forward Voltage ²	V _{GS} =0V, I _S =1A, T _J =25°C	---	---	1.2	V

Note :

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2.The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%
- 3.The EAS data shows Max. rating . The test condition is V_{DD}=25V,V_{GS}=10V,L=0.1mH,I_{AS}=61A
- 4.The power dissipation is limited by 150°C junction temperature
- 5.The data is theoretically the same as I_D and I_S , in real applications , should be limited by total power dissipation.

Typical Characteristics

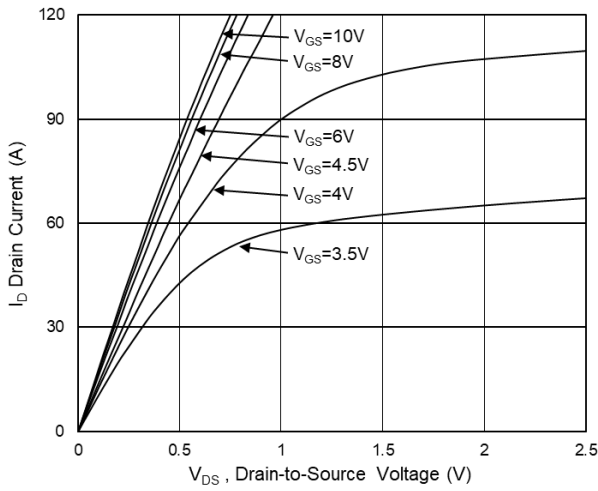


Fig.1 Typical Output Characteristics

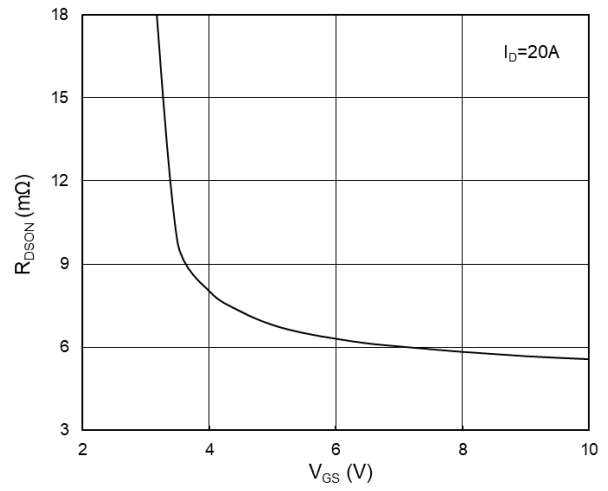


Fig.2 On-Resistance vs G-S Voltage

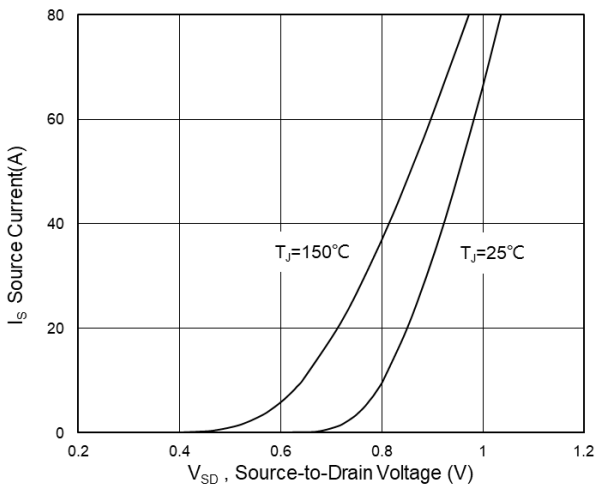


Fig.3 Source Drain Forward Characteristics

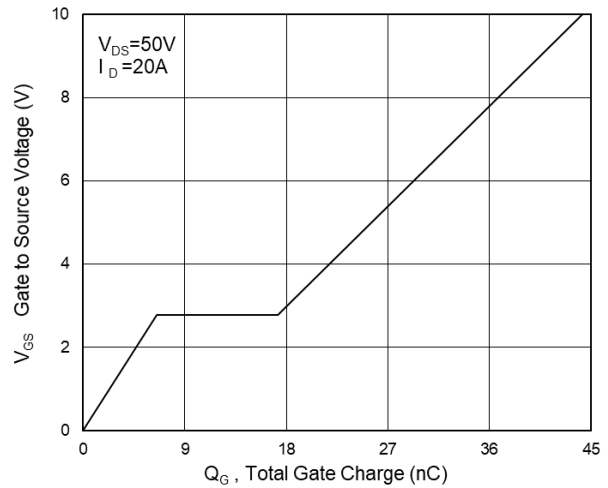


Fig.4 Gate-Charge Characteristics

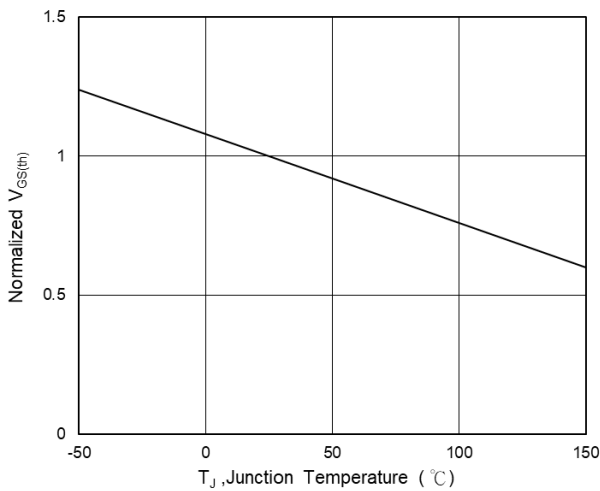


Fig.5 Normalized $V_{GS(th)}$ vs T_J

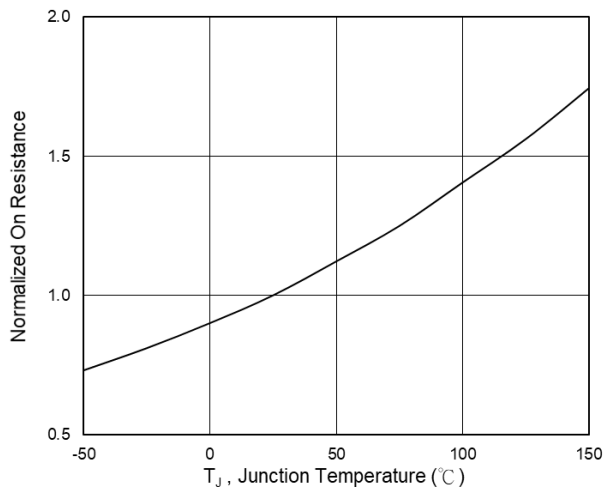


Fig.6 Normalized $R_{DS(on)}$ vs T_J

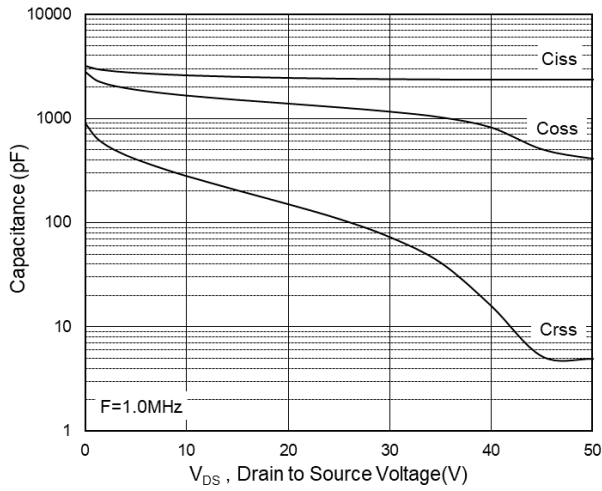


Fig.7 Capacitance

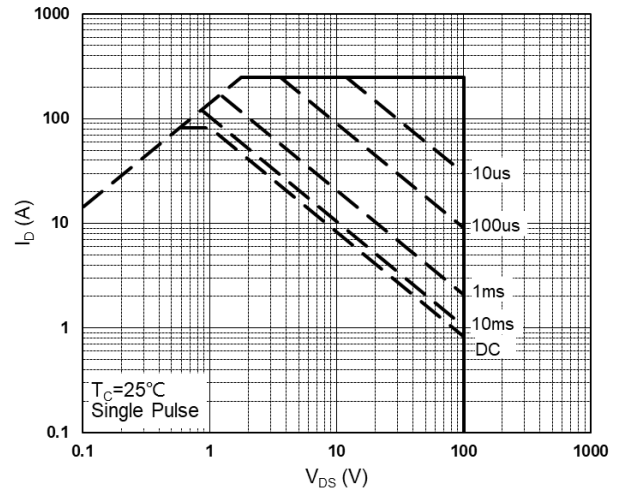


Fig.8 Safe Operating Area

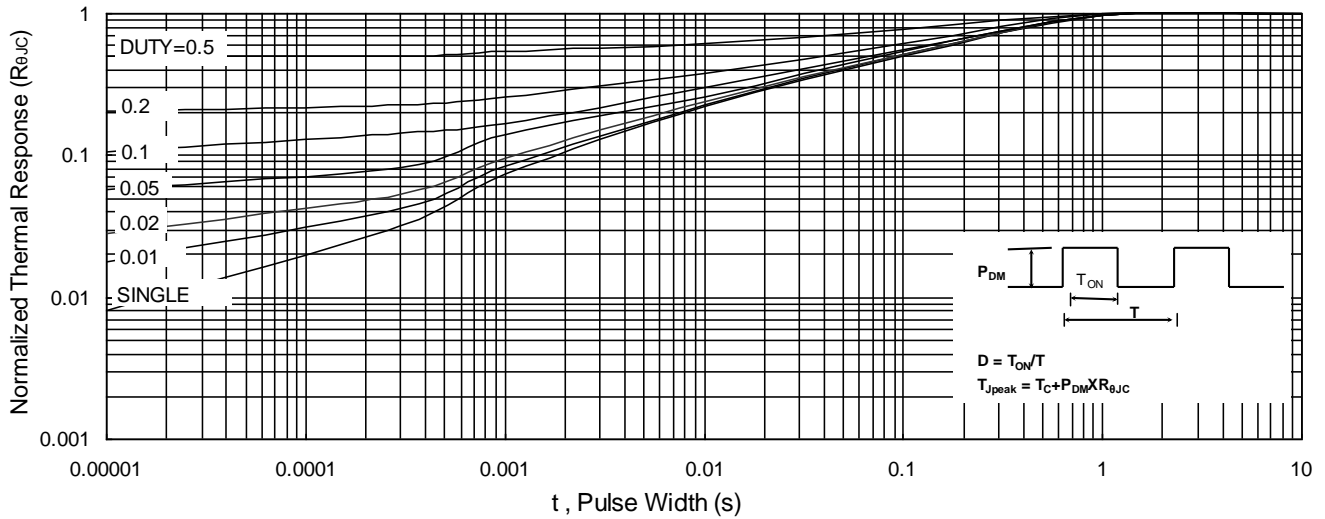


Fig.9 Normalized Maximum Transient Thermal Impedance

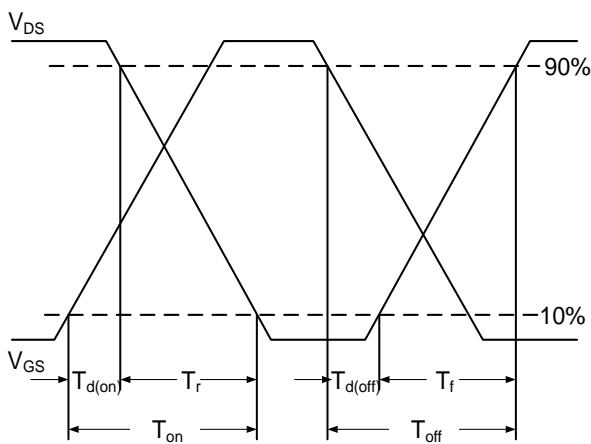


Fig.10 Switching Time Waveform

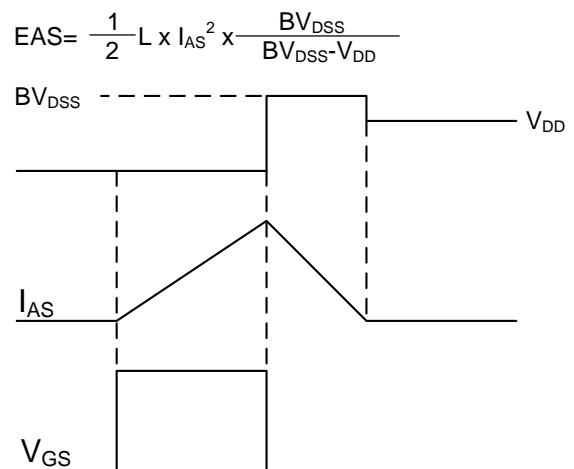
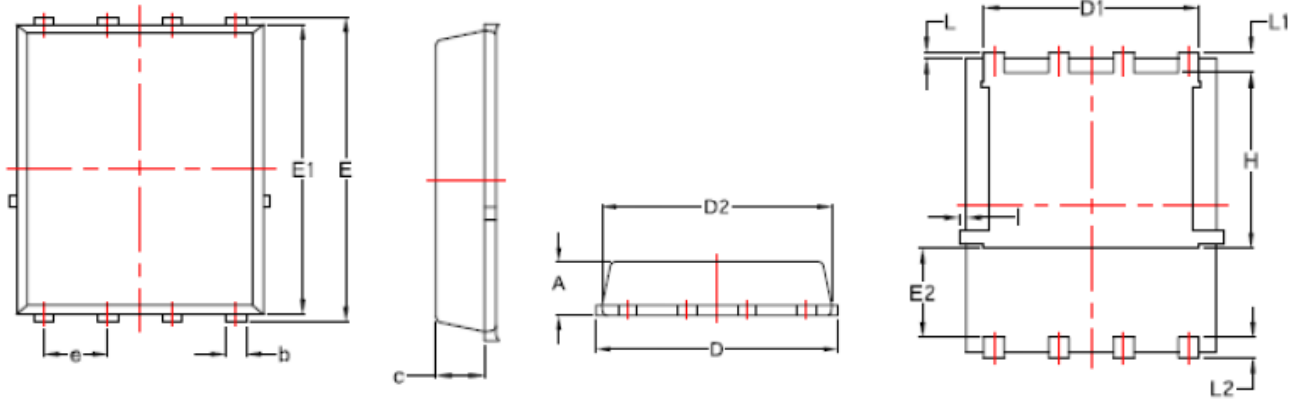


Fig.11 Unclamped Inductive Waveform

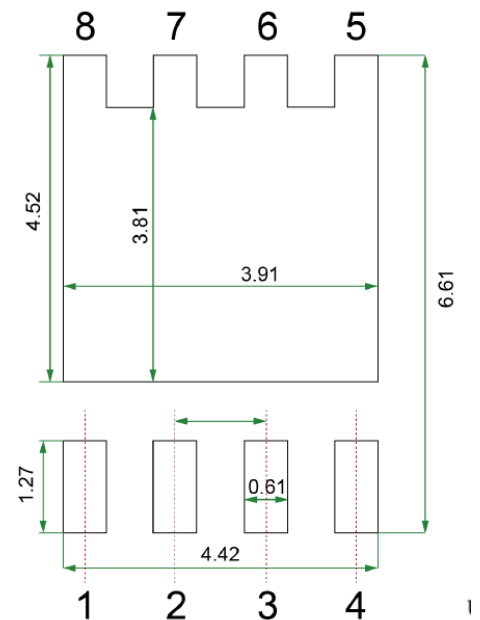
DFN5×6 Outline



Land Pattern (Only for Reference)

Unit : mm

SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.90	1.20	0.0354	0.0474
b	0.30	0.51	0.0118	0.0200
c	0.60	1.046	0.0236	0.0412
D	4.80	5.45	0.1890	0.2146
D1	4.11	4.31	0.1618	0.1697
D2	4.80	5.20	0.1890	0.2047
E	5.90	6.35	0.2323	0.2500
E1	5.65	6.06	0.2224	0.2386
E2	1.10	-	0.0433	-
e	1.27 BSC		0.05 BSC	
L	0.05	0.25	0.0020	0.0098
L1	0.38	0.61	0.0150	0.0240
L2	0.30	0.71	0.0118	0.0280
H	3.30	3.92	0.1300	0.1543
I	-	0.18	-	0.0070



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