

General Description

WSF80N06H use advanced VD MOST technology to provide low RDS(ON), low gate charge, fast switching This device is specially designed to get better ruggedness and suitable to use in Low RDS(on) & FOM Extremely low switching loss Excellent stability and uniformity or Invertors

Features

- Advanced high cell density Trench technology
- Green Device Available
- Excellent Cdv/dt effect decline
- Super Low Gate Charge

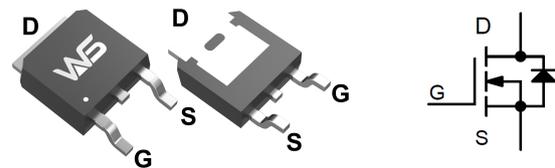
Product Summary

BVDSS	RDS(ON)	ID
60V	8.0mΩ	70A

Applications

- Load switch.
- Battery protection.
- Uninterruptible power supply.

TO-252 Pin Configuration



Absolute Maximum Ratings@T_J=25°C(unless otherwise specified)

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	60	V
VGS	Gate-Source Voltage	±20	V
I _D @T _C =25°C	Continuous Drain Current, V _{GS} @ 10V ₁	70	A
I _D @T _C =100°C	Continuous Drain Current, V _{GS} @ 10V ₁	36	A
I _D @T _A =25°C	Continuous Drain Current, V _{GS} @ 10V ₁	10.2	A
I _D @T _A =70°C	Continuous Drain Current, V _{GS} @ 10V ₁	9.5	A
IDM	Pulsed Drain Current ₂	100	A
EAS	Single Pulse Avalanche Energy ₃	72.2	mJ
IAS	Avalanche Current	38	A
P _D @T _C =25°C	Total Power Dissipation ₄	52	W
P _D @T _A =25°C	Total Power Dissipation ₄	2	W
TSTG	Storage Temperature Range	-55 to 150	°C
T _J	Operating Junction Temperature Range	-55 to 150	°C
R _{θJA}	Thermal Resistance Junction-Ambient ₁	62	°C/W
R _{θJC}	Thermal Resistance Junction-Case ₁	2.4	°C/W

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BVDSS	Drain-Source Breakdown Voltage	V _{GS} =0V , I _D =250uA	60	65	---	V
ΔBVDSS/ΔT _J	BV _{DSS} Temperature Coefficient	Reference to 25°C , I _D =1mA	---	0.052	---	V/°C
RDS(ON)	Static Drain-Source On-Resistance ²	V _{GS} =10V , I _D =8A	---	8.0	10	mΩ
VGS(th)	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	2.0	2.9	4.0	V
ΔVGS(th)	V _{GS(th)} Temperature Coefficient		---	-5.76	---	mV/°C
IDSS	Drain-Source Leakage Current	V _{DS} =48V , V _{GS} =0V , T _J =25°C	---	---	1	uA
		V _{DS} =48V , V _{GS} =0V , T _J =55°C	---	---	5	
IGSS	Gate-Source Leakage Current	V _{GS} =±20V , V _{DS} =0V	---	---	±100	nA
gfs	Forward Transconductance	V _{DS} =5V , I _D =30A	---	42	---	S
R _g	Gate Resistance	V _{DS} =0V , V _{GS} =0V , f=1MHz	---	1.5	---	Ω
Q _g	Total Gate Charge (4.5V)	V _{DS} =48V , V _{GS} =4.5V , I _D =15A	---	28.7	---	nC
Q _{gs}	Gate-Source Charge		---	10.5	---	
Q _{gd}	Gate-Drain Charge		---	9.9	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =30V , V _{GS} =10V , R _G =3.3Ω , I _D =15A	---	10.4	---	ns
T _r	Rise Time		---	9.2	---	
T _{d(off)}	Turn-Off Delay Time		---	63	---	
T _f	Fall Time		---	4.8	---	
C _{iss}	Input Capacitance	V _{DS} =15V , V _{GS} =0V , f=1MHz	---	3240	---	pF
C _{oss}	Output Capacitance		---	210	---	
C _{rss}	Reverse Transfer Capacitance		---	146	---	
I _S	Continuous Source Current ^{1,5}	V _G =V _D =0V , Force Current	---	---	47	A
I _{SM}	Pulsed Source Current ^{2,5}		---	---	100	A
V _{SD}	Diode Forward Voltage ²	V _{GS} =0V , I _S =1A , T _J =25°C	---	---	1.2	V
t _{rr}	Reverse Recovery Time	I _F =15A , dI/dt=100A/μs , T _J =25°C	---	18	---	nS
Q _{rr}	Reverse Recovery Charge		---	14	---	nC

Note :

- 1、 The data tested by surface mounted on a 1 inch 2 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} =38A
- 4、 The power dissipation is limited by 150°C junction temperature
- 5、 The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Characteristics

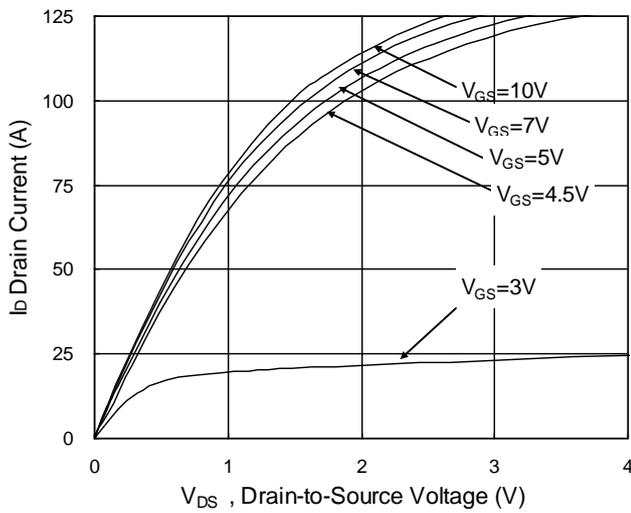


Fig.1 Typical Output Characteristics

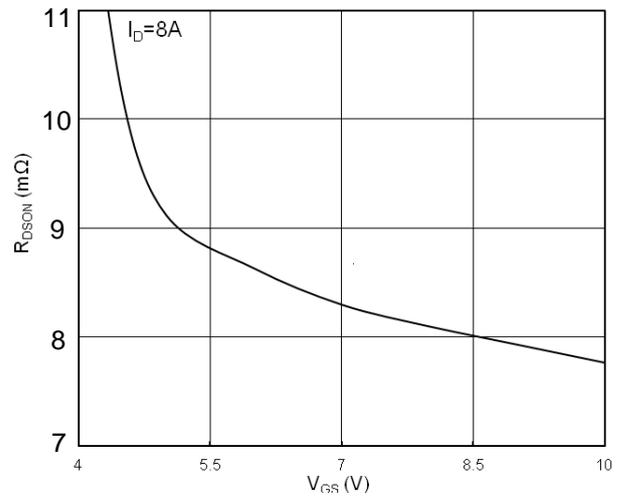


Fig.2 On-Resistance v.s Gate-Source

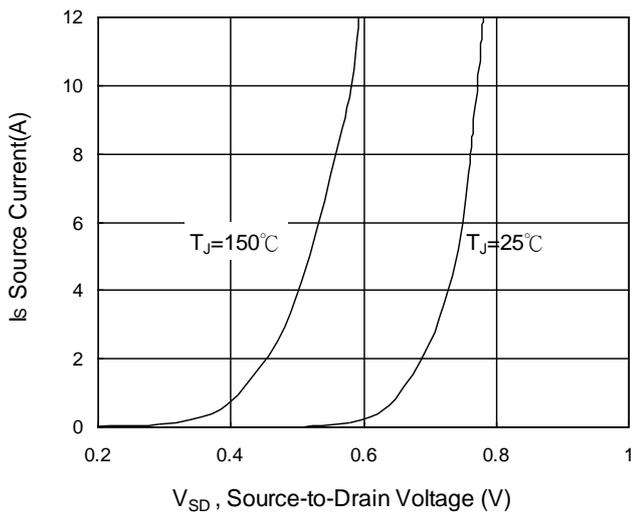


Fig.3 Forward Characteristics of Reverse

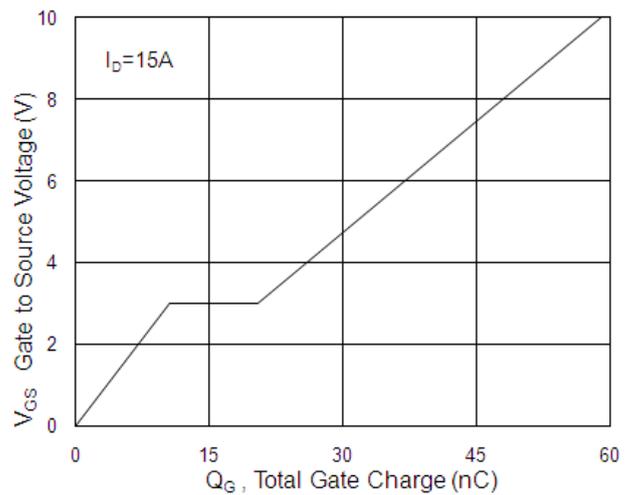


Fig.4 Gate-Charge Characteristics

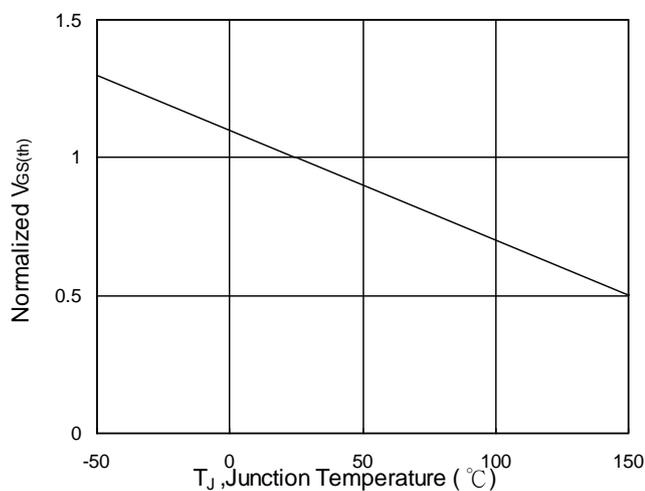


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

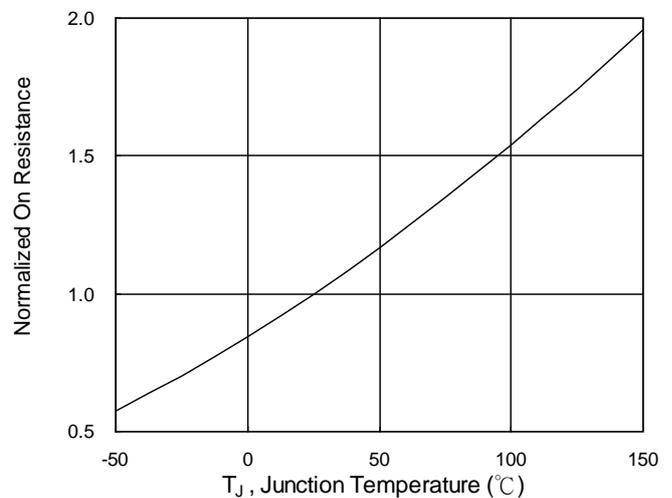


Fig.6 Normalized $R_{DS(on)}$ vs. T_J

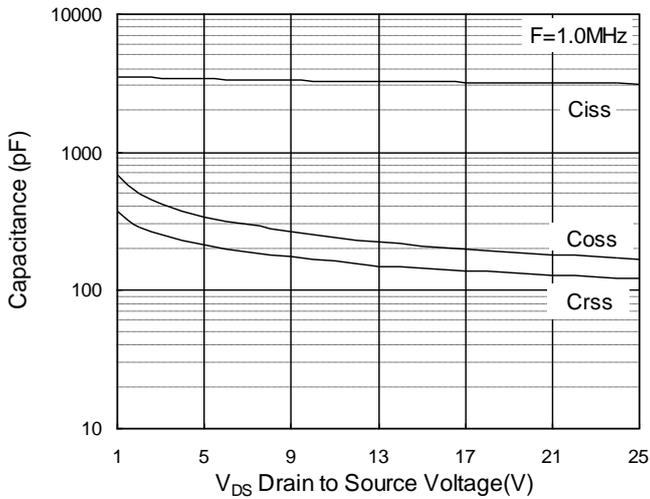


Fig.7 Capacitance

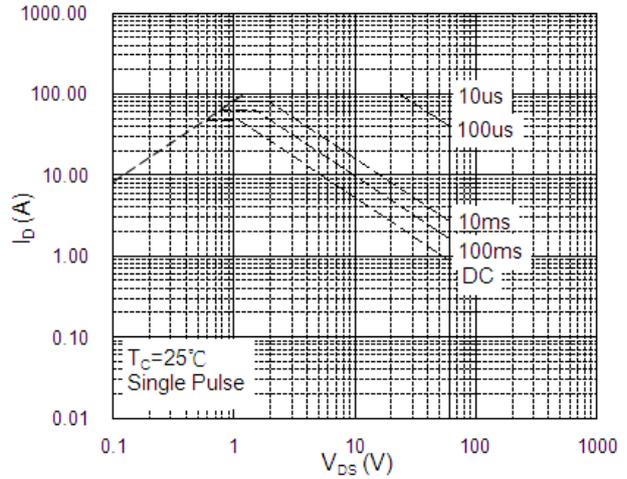


Fig.8 Safe Operating Area

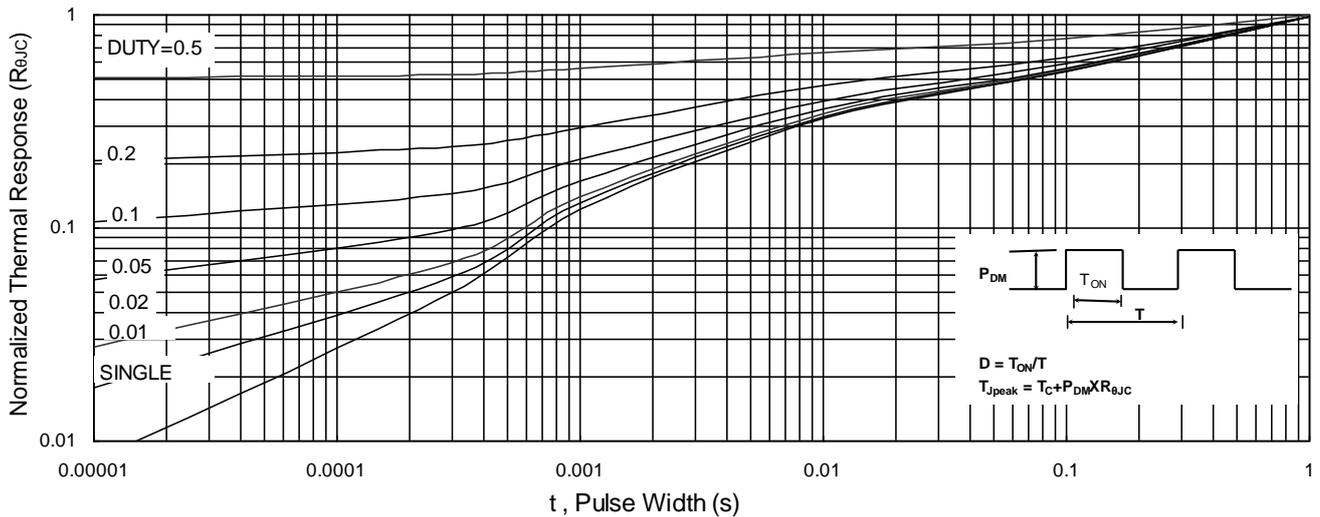


Fig.9 Normalized Maximum Transient Thermal Impedance

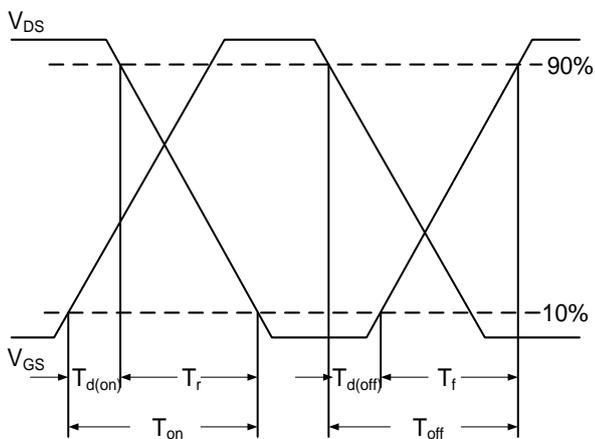


Fig.10 Switching Time Waveform

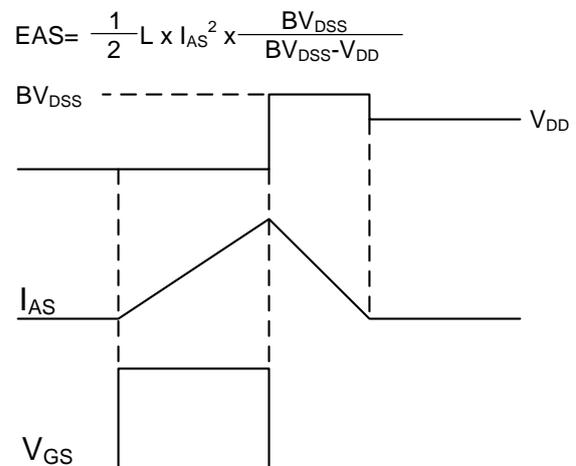


Fig.11 Unclamped Inductive Switching Waveform



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