

Features

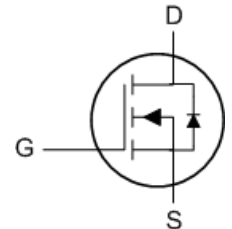
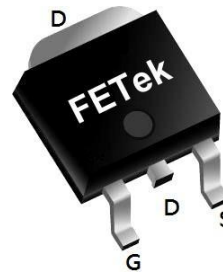
- ★ Advanced Trench MOS Technology
- ★ 100% EAS Guaranteed
- ★ Reliable and Rugged
- ★ Green Device Available

Product Summary


BVDSS	RDSON	ID
100V	26mΩ	30A

Applications

- ★ Synchronous Rectification in SMPS.
- ★ Hard Switching and High Speed Circuit.
- ★ DC/DC in Telecoms and Industrial.

TO252 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 ¹	30	A
$I_D@T_C=100^\circ C$	Continuous Drain Current ¹	18.5	A
I_{DM}	Pulsed Drain Current ²	120	A
EAS	Single Pulse Avalanche Energy ³	64.8	mJ
I_{AS}	Avalanche Current	36	A
$P_D@T_C=25^\circ C$	Total Power Dissipation ⁴	52	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	---	50	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-case ¹	---	2.4	$^\circ C/W$

**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 =8A	---	22	26	mΩ
		V _{GS} =4.5V , I _D =4A	---	24	32	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	1.2	1.8	2.5	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
Q _g	Total Gate Charge (10V)	V _{DS} =30V , V _{GS} =10V , I _D =8A	---	57	---	nC
Q _{gs}	Gate-Source Charge		---	8.7	---	
Q _{gd}	Gate-Drain Charge		---	14	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =30V , V _{GS} =10V , R _G =3.3Ω, I _D =1A	---	16.2	---	ns
T _r	Rise Time		---	41.2	---	
T _{d(off)}	Turn-Off Delay Time		---	56.4	---	
T _f	Fall Time		---	16.2	---	
C _{iss}	Input Capacitance	V _{DS} =25V , V _{GS} =0V , f=1MHz	---	3307	---	pF
C _{oss}	Output Capacitance		---	201	---	
C _{rss}	Reverse Transfer Capacitance		---	151	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current ^{1,5}	V _G =V _D =0V , Force Current	---	---	15	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 =8A , di/dt=100A/μs ,	---	44	---	nS
Q _{rr}	Reverse Recovery Charge	T _J =25°C	---	25	---	

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}=36A
- 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

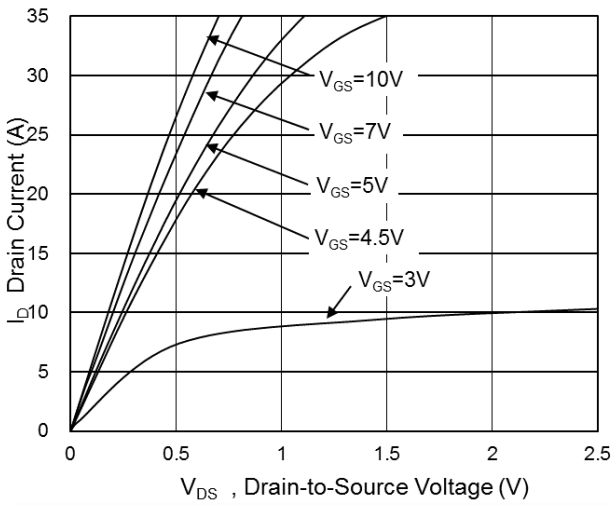


Fig.1 Typical Output Characteristics

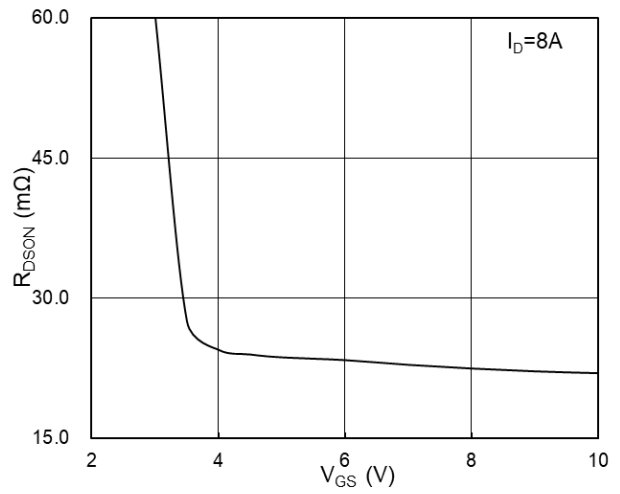


Fig.2 On-Resistance vs G-S Voltage

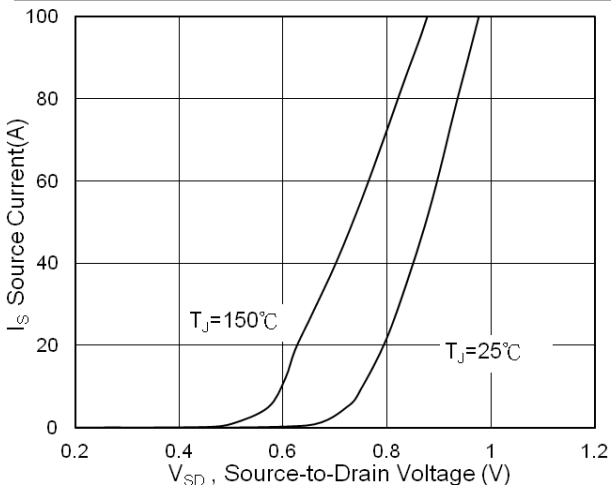


Fig.3 Source-Drain Diode Forward Voltage

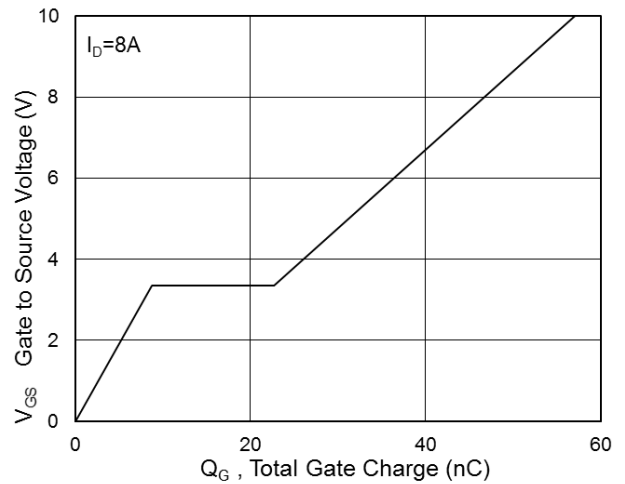


Fig.4 Gate-Charge Characteristics

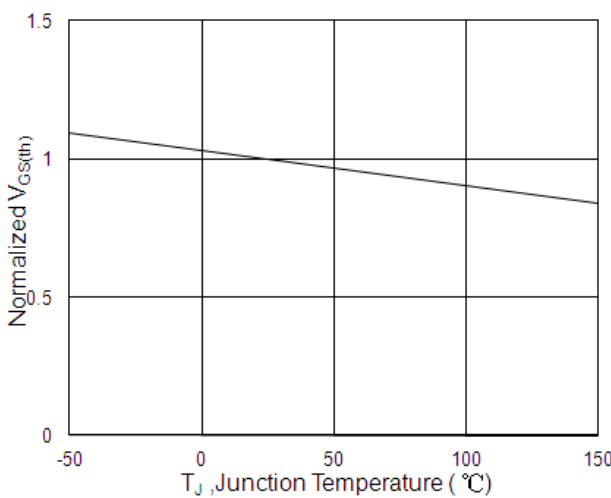


Fig.5 Normalized $V_{GS(th)}$ vs T_J

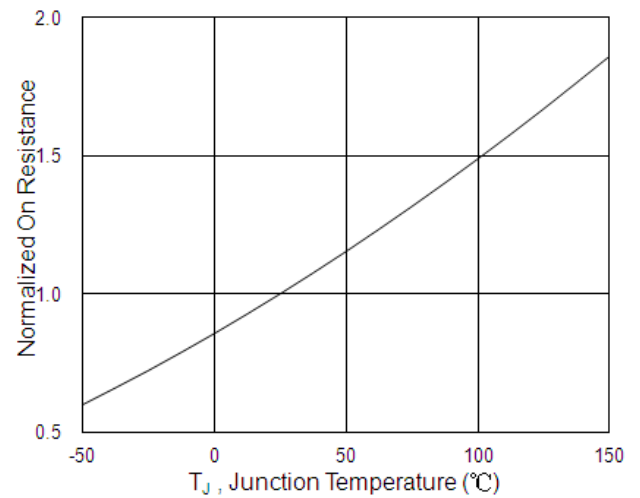


Fig.6 Normalized R_{DSON} vs T_J

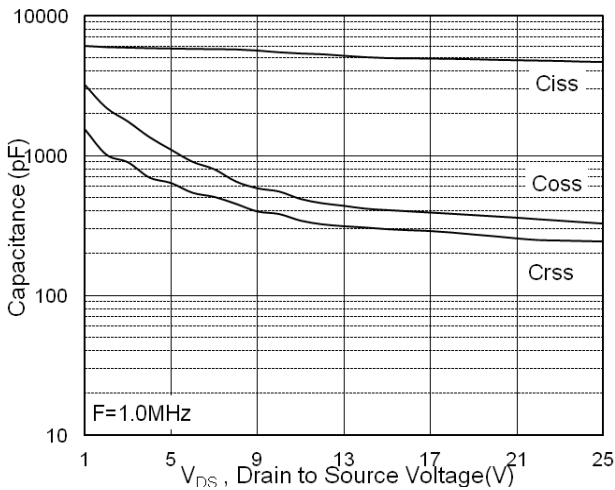


Fig.7 Capacitance

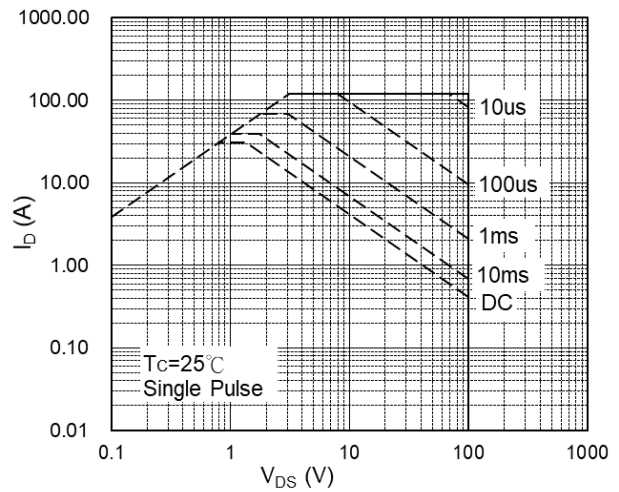


Fig.8 Safe Operating Area

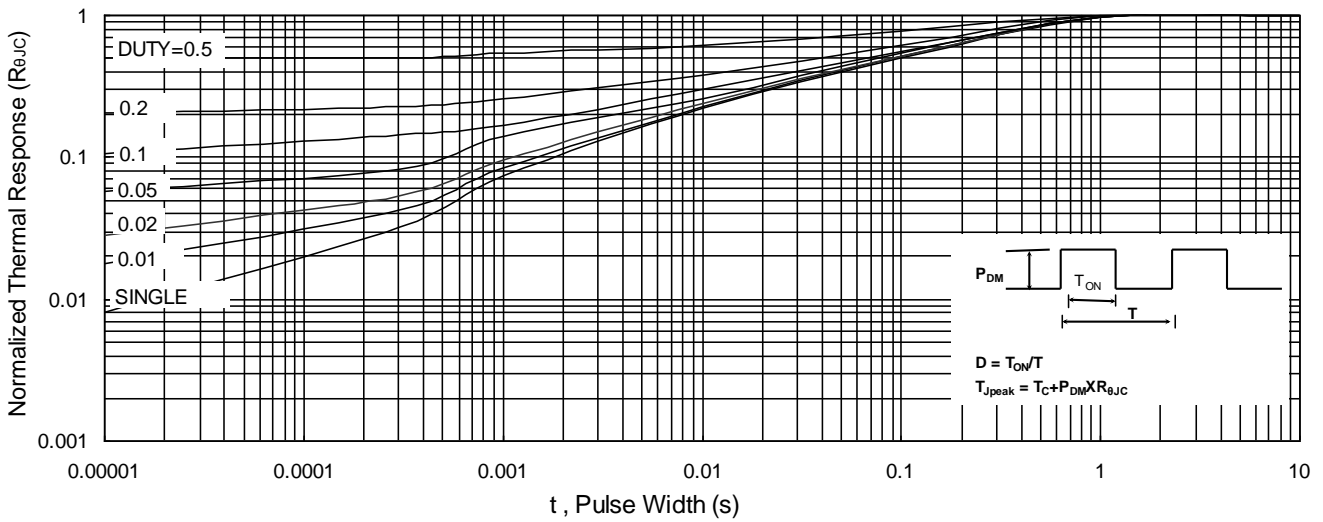


Fig.9 Normalized Maximum Transient Thermal Impedance

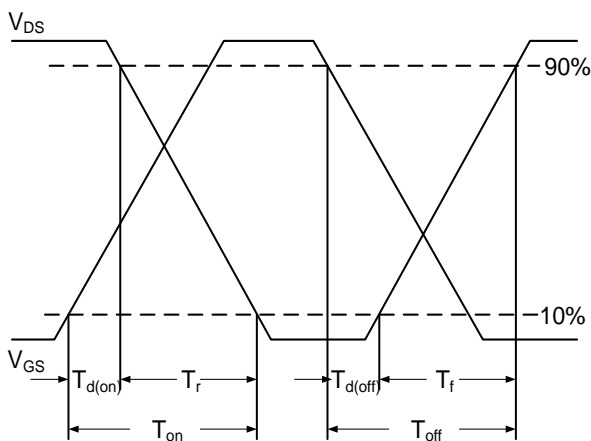


Fig.10 Switching Time Waveform

$$EAS = \frac{1}{2} L \times I_{AS}^2 \times \frac{BV_{DSS}}{BV_{DSS} - V_{DD}}$$

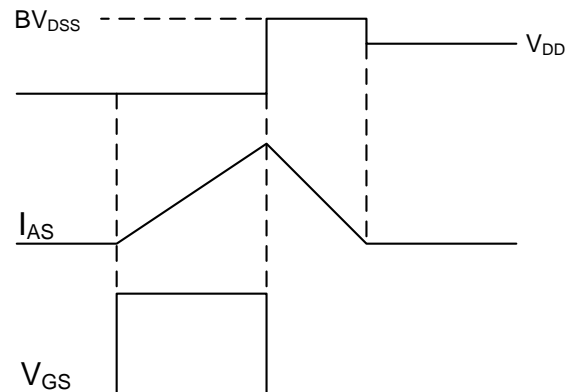


Fig.11 Unclamped Inductive Switching Waveform