

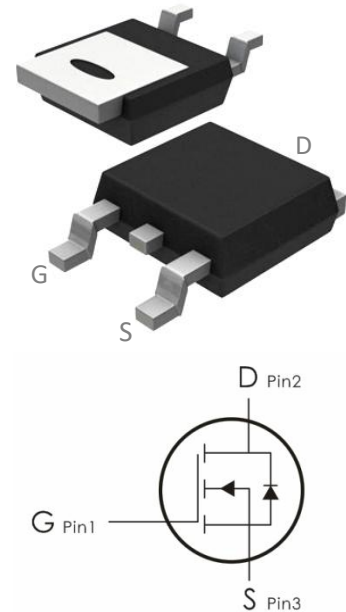
Description:

This N-Channel MOSFET uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge.

It can be used in a wide variety of applications.

Features:

- 1) $V_{DS}=30V, I_D=25A, R_{DS(on)} < 25m\Omega @ V_{GS}=10V$
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra low $R_{DS(on)}$.
- 5) Excellent package for good heat dissipation.



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

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current- $T_C=25^\circ\text{C}$	25	A
	Continuous Drain Current- $T_C=100^\circ\text{C}$	15	
	Continuous Drain Current- $T_A=25^\circ\text{C}$	7.3	
	Continuous Drain Current- $T_A=70^\circ\text{C}$	5.8	
I_{DM}	Pulsed Drain Current ²	50	A
E_{AS}	Single Pulse Avalanche Energy ³	8.1	mJ
I_{AS}	Avalanche Current	12.7	A
P_D	Power Dissipation ⁴ , $T_C=25^\circ\text{C}$	20.8	W
	Power Dissipation ⁴ , $T_A=25^\circ\text{C}$	2	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ\text{C}$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case ¹	6	°C/W
$R_{\theta JA}$	Thermal Resistance Junction to mbient ¹	62	

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

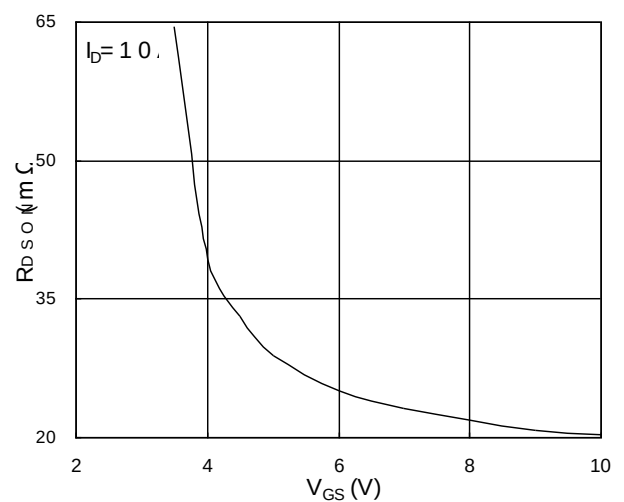
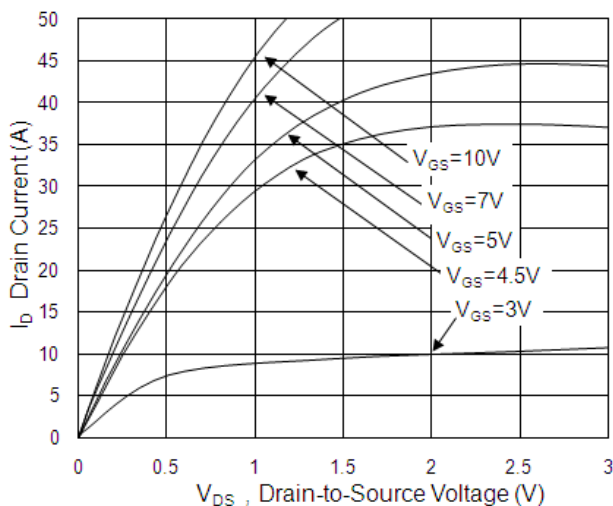
Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Sourtce Breakdown Voltage	V _{GS} =0V,I _D =250 μ A	30	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =24V,T _A =25 °C	---	---	1	μ A
		V _{GS} =0V, V _{DS} =24V,T _A =55 °C	---	---	5	μ A
I _{GSS}	Gate-Source Leakage Current	V _{GS} =± 30V, V _{DS} =0A	---	---	± 100	nA
On Characteristics						
V _{GS(th)}	GATE-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =250 μ A	0.5	0.9	1.3	V
R _{DS(ON)}	Drain-Source On Resistance ²	V _{GS} =10V,I _D =10A	---	---	25	m Ω
		V _{GS} =4.5V,I _D =8A	---	---	28	m Ω
G _{FS}	Forward Transconductance	V _{DS} =5V , I _D =10A	---	5.5	---	S
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1MHz	---	410	---	pF
C _{OSS}	Output Capacitance		---	60	---	
C _{rss}	Reverse Transfer Capacitance		---	50	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DD} =15V,I _D =10A, R _G =3.3Ω,V _{GS} =10V	---	1.6	---	ns
t _r	Rise Time		---	15.8	---	ns
t _{d(off)}	Turn-Off Delay Time		---	13	---	ns

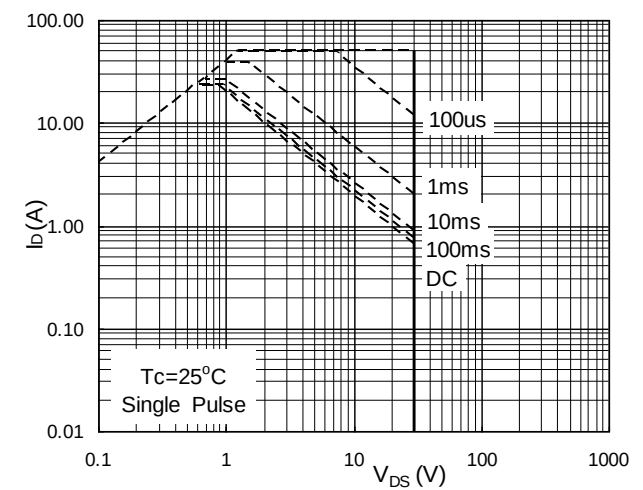
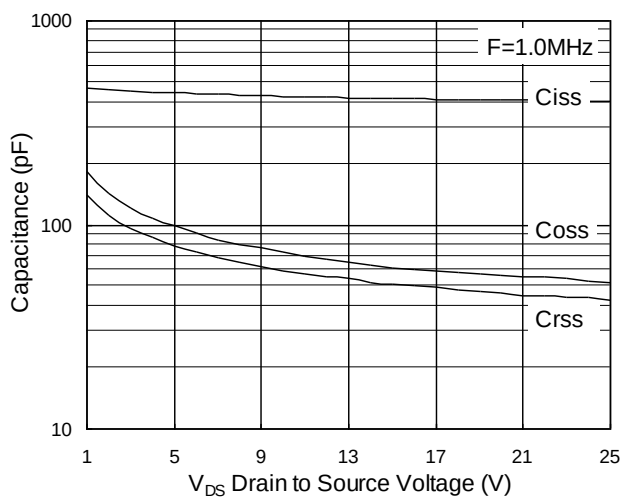
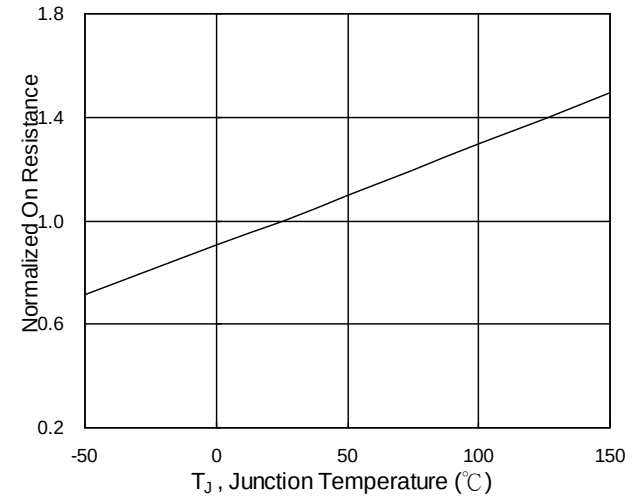
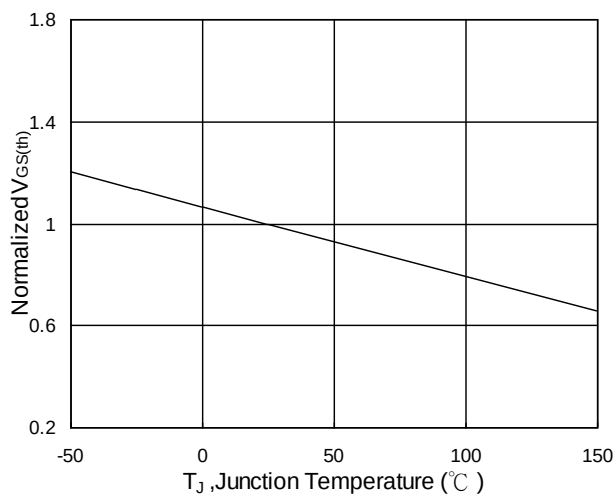
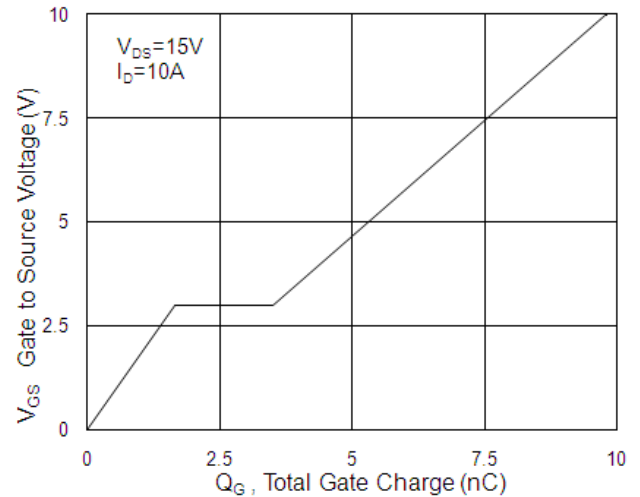
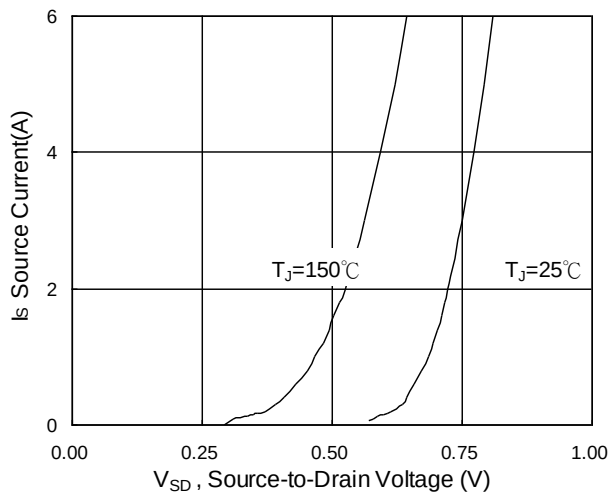
t_f	Fall Time		---	4.8	---	ns
Q_g	Total Gate Charge	V _{GS} =4.5V, V _{DS} =15V, I _D =10A	---	4.9	---	nC
Q_{gs}	Gate-Source Charge		---	1.66	---	nC
Q_{gd}	Gate-Drain "Miller" Charge		---	1.85	---	nC
R_G	Gate Resistance	V _{DS} =0V, V _{GS} =0V, f=1MHz	---	2.3	---	Ω
Drain-Source Diode Characteristics						
I_S	Max. Diode Forward Current ^{1,5}	V _G =V _D =0V, Force Current	---	---	24	A
I_{SM}	Max. Pulsed Forward Current ^{2,5}		---	---	50	A
V_{SD}	Source-Drain Diode Forward Voltage ²	V _{GS} =0V, I _S =1A, T _J =25°C	---	---	1.2	V
t_{rr}	Reverse Recovery Time	I _F =10A, T _J =25°C	---	8.7	---	ns
Q_{rr}	Reverse Recovery Charge		---	1.95	---	nC

Notes:

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 20Z 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}=12.7A
- 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: (T_A=25°C unless otherwise noted)





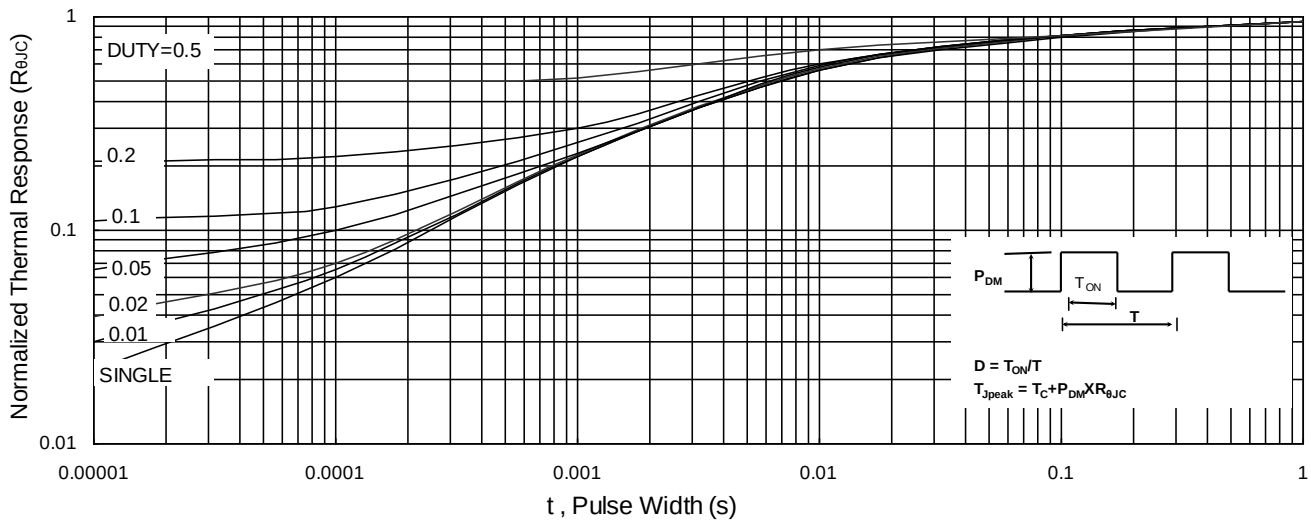


Fig.9 Normalized Maximum Transient Thermal Impedance

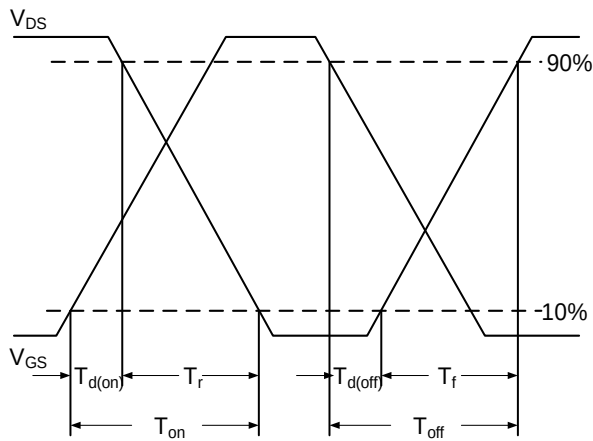


Fig.10 Switching Time Waveform

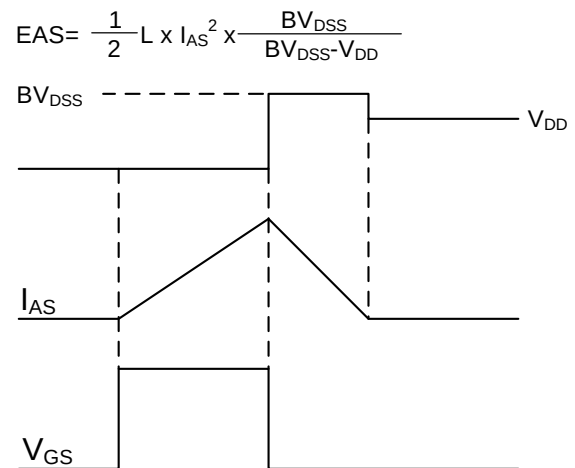


Fig.11 Unclamped Inductive Switching Waveform



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