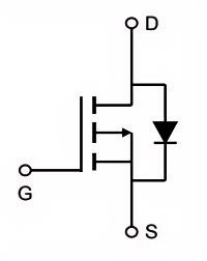
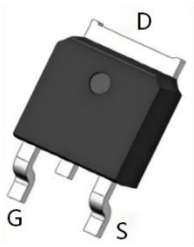
P-Channel Enhancement Mode MOSFET

Parameter	Value	Unit
V_{DS}	-60	V
$R_{DS(on)}$	48	mΩ
I_D	-20	A





TO-252

Features

- Super Low Gate Charge
- Excellent CdV/dt effect decline
- Advanced high cell density Trench technology

Applications

- DC-DC Converters
- Power Switch

Absolute Maximum Ratings

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	-60	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current [1]	T_C=25℃	I_D	-20	A
Continuous Drain Current [1]	T_C=100℃	I_D	-12	A
Continuous Drain Current [1]	T_A=25℃	I_D	-4.5	A
Continuous Drain Current [1]	T_A=70℃	I_D	-4.0	A
Pulsed Drain Current [2]		I_{DM}	-30	A
Single Pulse Avalanche Energy [3]		E_{AS}	18.1	mJ
Avalanche Current		I_{AS}	-13	A
Total Power Dissipation [4]	T_C=25℃	P_D	25	W
Total Power Dissipation [4]	T_A=25℃	P_D	2	W
Storage Temperature Range		T_{STG}	-55 to 150	℃
Operating Junction Temperature Range		T_J	-55 to 150	℃

Thermal Characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance Junction-ambient [1]	$R_{\theta JA}$	--	62	℃/W
Thermal Resistance Junction-Case [1]	$R_{\theta JC}$	--	5	℃/W

Electrical Characteristics(T_J=25℃,unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V , I_D=-250uA	-60	--	--	V
Static Drain-Source On-Resistance[2]	$R_{DS(ON)}$	V_{GS}=-10V , I_D=-10A	--	48	58	mΩ
		V_{GS}=-4.5V , I_D=-6A	--	56	67	
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS} , I_D=-250uA	-1.2	--	-2.5	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=-24V,V_{GS}=0V,T_J=25℃	--	--	-1	uA
		V_{DS}=-24V,V_{GS}=0V,T_J=55℃	--	--	-5	
Gate-Source Leakage Current	I_{GSS}	V_{GS}= ±20V,V_{DS}=0V	--	--	±100	nA
Forward Transconductance	g_{fs}	V_{DS}=-5V , I_D=-15A	--	12	--	S
Total Gate Charge(-4.5V)	Q_g	V_{DS}=-15V, V_{GS}=-4.5V I_D=-15A	--	6.1	--	nC
Gate-Source Charge	Q_{gs}		--	3.1	--	
Gate-Drain Charge	Q_{gd}		--	1.8	--	
Turn-On Delay Time	$T_{d(on)}$	V_{DD}=-15V , V_{GS}=-10V R_G=3.3Ω ,I_D=-15A	--	2.6	--	ns
Rise Time	T_r		--	8.6	--	
Turn-Off Delay Time	$T_{d(off)}$		--	33.6	--	
Fall Time	T_f		--	6	--	
Input Capacitance	C_{iss}	V_{DS}=-15V , V_{GS}=0V f=1MHz	--	585	--	pF
Output Capacitance	C_{oss}		--	100	--	
Reverse Transfer Capacitance	C_{rss}		--	85	--	

Diode Characteristics

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Continuous Source Current [1,5]	I_S	V_G=V_D=0V , Force Current	--	--	-20	A
Pulsed Source Current [2,5]	I_{SM}		--	--	-30	A
Diode Forward Voltage [2]	V_{SD}	V_{GS}=0V , I_S=-1A , T_J=25℃	--	--	-1.2	V
Reverse Recovery Time	t_{rr}	I_F=-15A , dI/dt=100A/μs T_J=25℃	--	6.1	--	nS
Reverse Recovery Charge	Q_{rr}		--	1.4	--	nC

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}=-13A

4.The power dissipation is limited by 150℃ 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

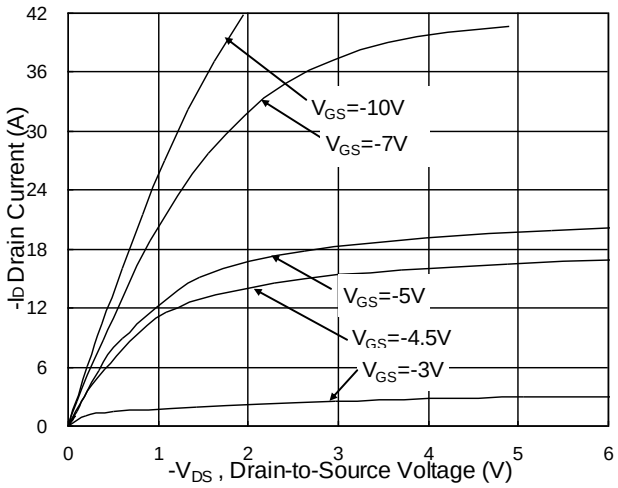


Fig.1 Typical Output Characteristics

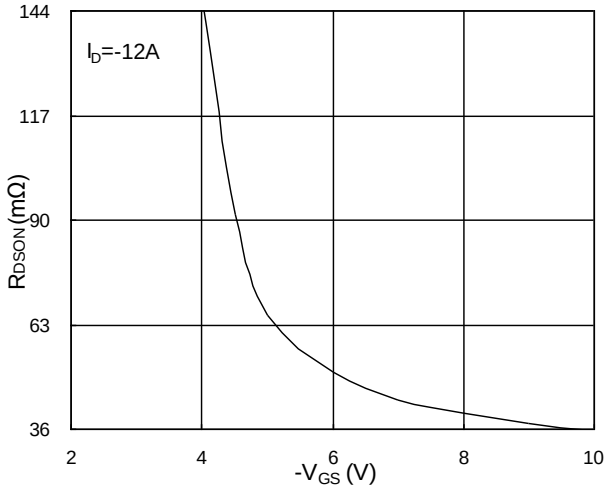


Fig.2 On-Resistance v.s Gate-Source

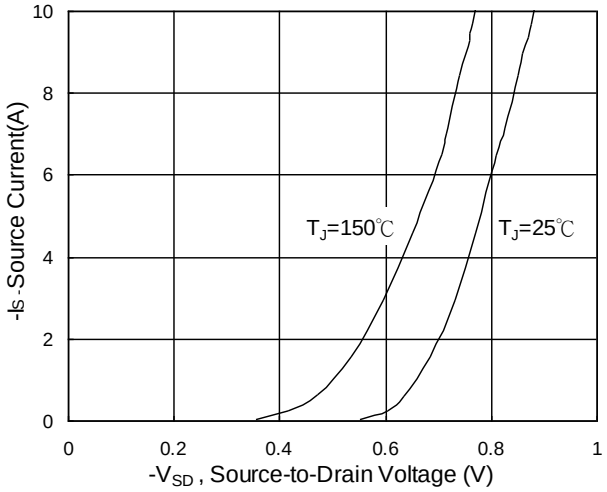


Fig.3 Forward Characteristics Of Reverse

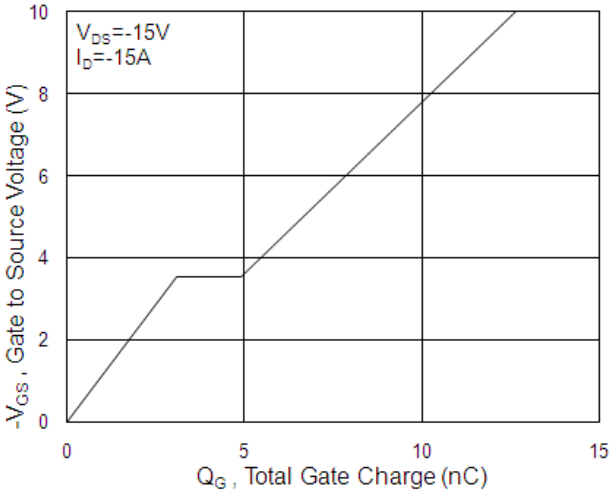


Fig.4 Gate Charge Characteristics

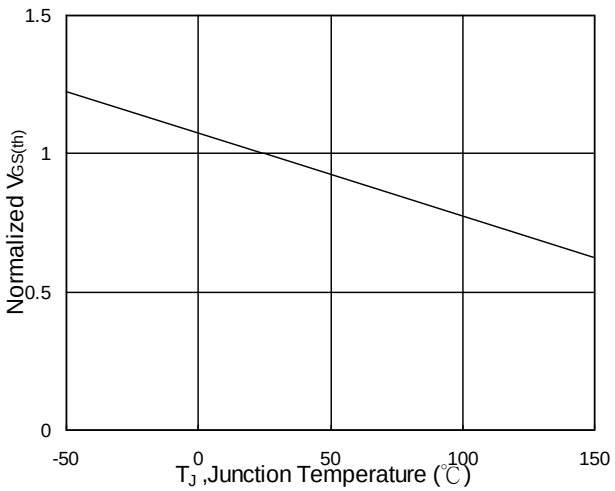


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

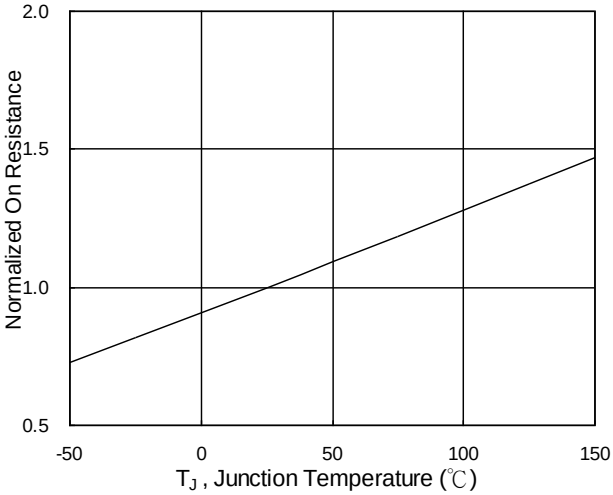


Fig.6 Normalized R_{DSON} vs. T_J

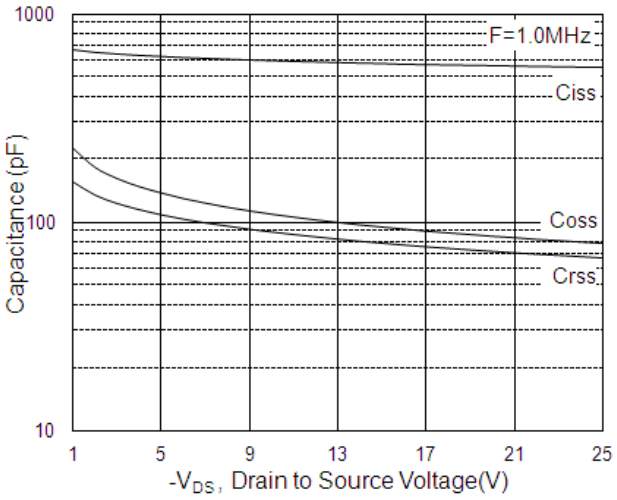


Fig.7 Capacitance

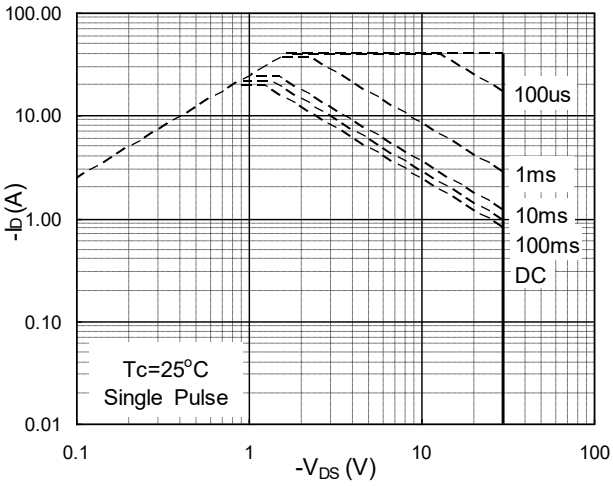


Fig.8 Safe Operating Area

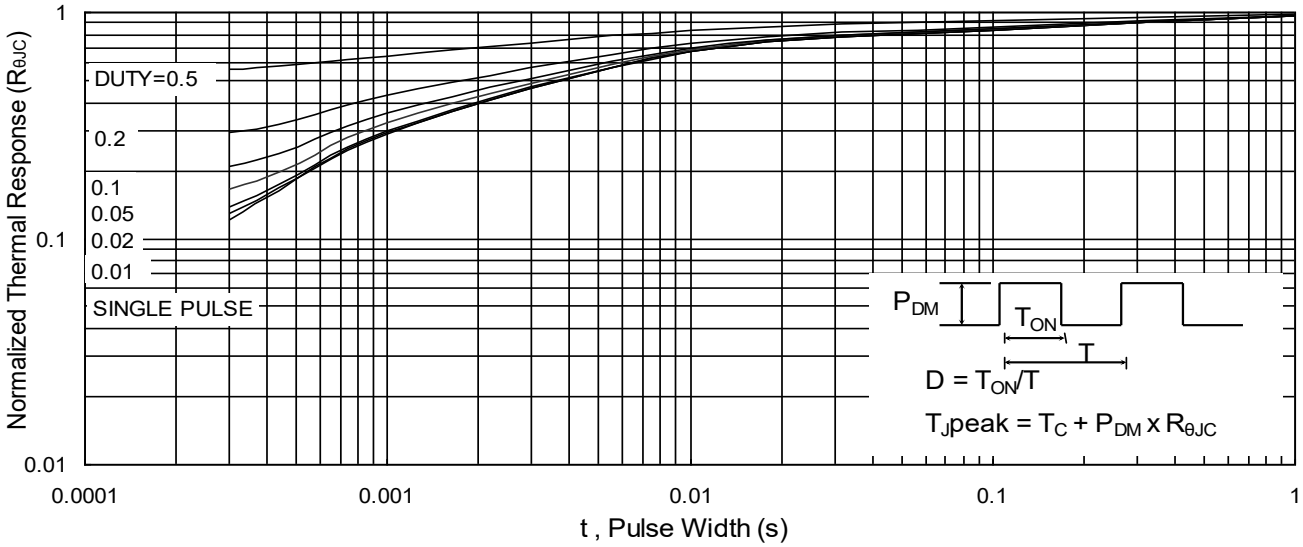


Fig.9 Normalized Maximum Transient Thermal Impedance

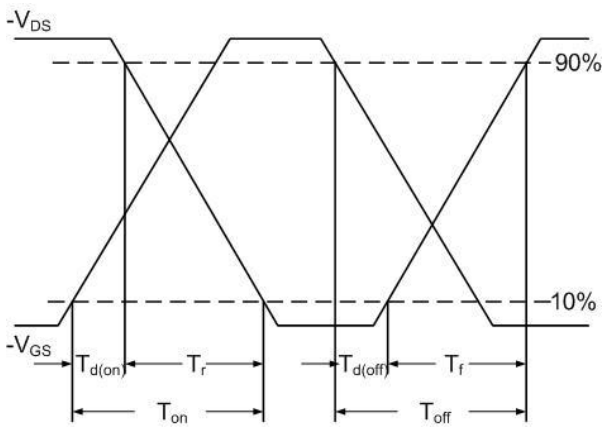


Fig.10 Switching Time Waveform

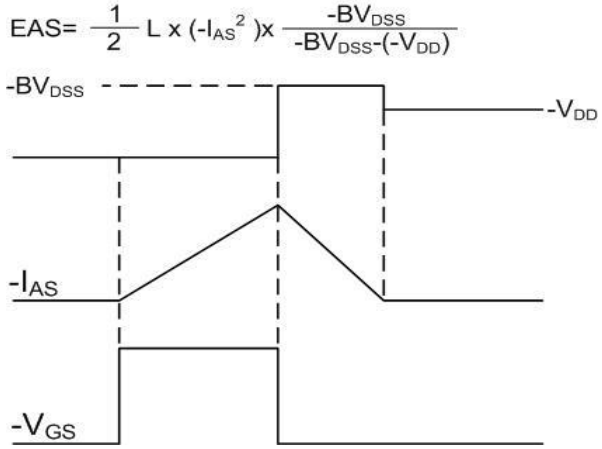
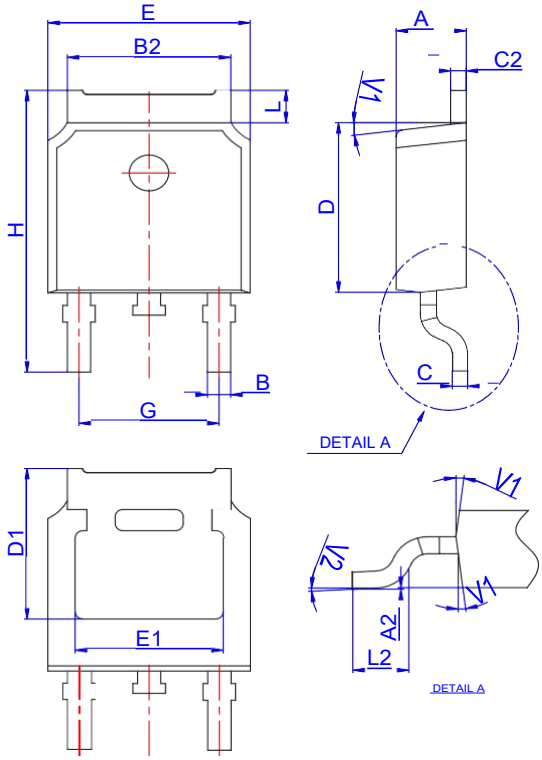


Fig.11 Unclamped Inductive Switching Waveform

Package Outlines Dimensions (Units: mm)

TO-252



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°

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