N-Ch 100V Fast Switching MOSFET

Features

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

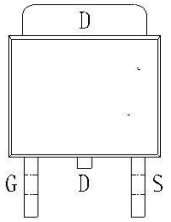
Product Summary

V_{DS}	100	V
$R_{DS(on)}$	18	mΩ
I_D	50	A

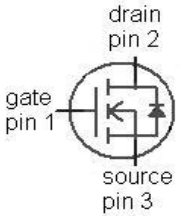
Description

The FS50N10 is the highest performance trench N-ch MOSFETs with extreme high cell density which provide excellent RDSON and gate chargefor most of the synchronous buck converterapplicationsThe FS50N10 meet the RoHS and Green Product requirement，100% EAS guaranteed with fullfunction reliability approved.

Pin Configurations(TO252)



Top View



Absolute Maximum Ratings

Symbol	Parameter		Max.	Units
VDSS	Drain-Source Voltage		100	V
VGSS	Gate-Source Voltage		±20	V
ID	Continuous Drain Current	TC = 25℃	50	A
		TC = 100℃	30	A
IDM	Pulsed Drain Current note1		150	A
EAS	Single Pulsed Avalanche Energy notes		62.6	mJ
PD	Power Dissipation	TC = 25℃	73	W
RθJC	Thermal Resistance, Junction to Case		2.0	℃/W
TJ, TSTG	Operating and Storage Temperature Range		-55 to +175	℃

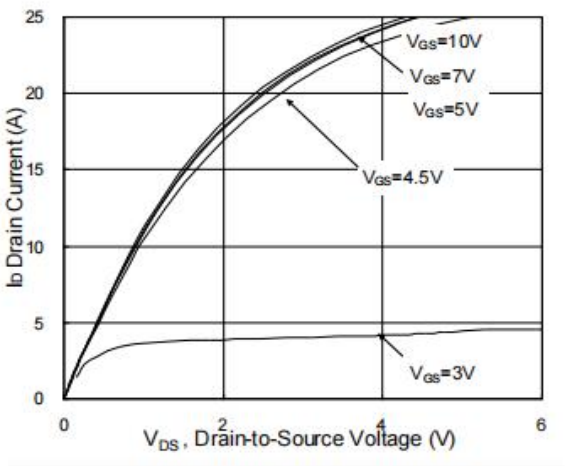
Electrical Characteristics (T_J=25°C unless otherwise noted)

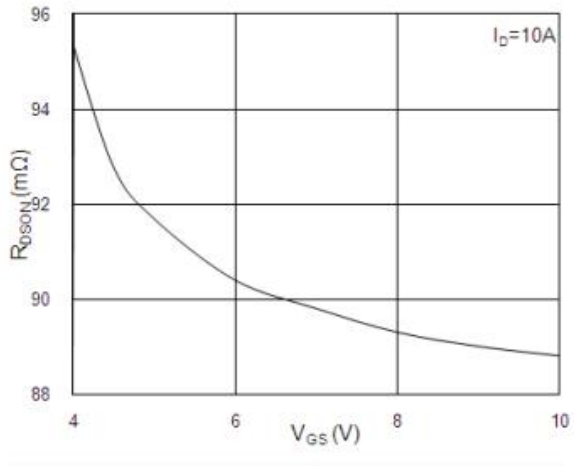
Symbol	Parameter	Conditions		Min	Typ	Max	Units
BV_{DSS}	Drain-Source Breakdown Voltage	I_D=250uA, V_{GS}=0V		100			V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=80V, V_{GS}=0	T_J=25°C			1	uA
			T_J=55°C			5	
I_{GSS}	Gate-Body leakage current	V_{DS}=0V, V_{GS}=±20V				±0.1	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS} I_D=250μA		1	1.5	2.5	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=10V, I_D=20A			18	28	mΩ
		V_{GS}=4.5V, I_D=10A			22	32	
g_{FS}	Forward Trans conductance	V_{DS}=5V, I_D=10A			13		S
V_{SD}	Diode Forward Voltage[2]	I_S=1A,V_{GS}=0V,T_J=25°C				1.2	V
I_{SM}	Pulsed Source Current[2,5]	V_G=V_D=0V,Force Current				150	A
I_S	Continuous Source Current[1,5]					50	
C_{iss}	Input capacitance	V_{GS}=0V,V_{DS}=25V,f=1MHz			3727		pF
C_{oss}	Output capacitance				180		
C_{rss}	Reverse transfer capacitance				148		
Q_g	Total Gate Charge(10V）	V_{GS}=10V,V_{DS}=30V,I_D=15A			40		nC
Q_{gs}	Gate - Source Charge				6.2		
Q_{gd}	Gate - Drain Charge				28		
R_g	Gate resistance	V_{DS}=0V,V_{GS}=0V,f=1MHz			2		Ω
$t_{D(on)}$	Turn-On Delay Time	V_{GS}=10V,V_{DD}=30V,R_G=1.8Ω, I_D=15A			22		ns
t_r	Turn-On Rise Time				182		
$t_{D(off)}$	Turn-Off Delay Time				80		
t_f	Turn-Off Fall Time				142		
t_{rr}	Body Diode Reverse Recovery Time	I_F=10A, dI/dt=100A/μs,T_J=25°C			71		

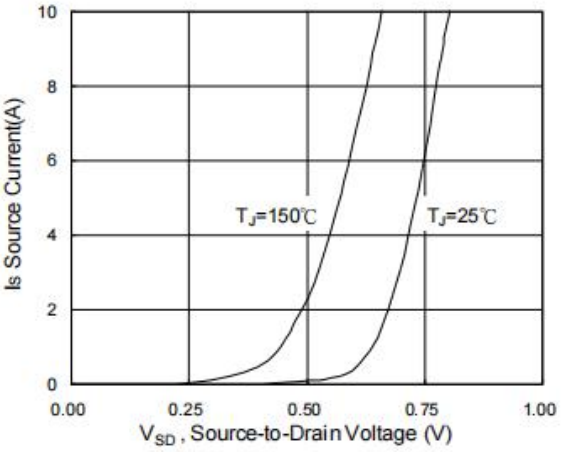
Notes

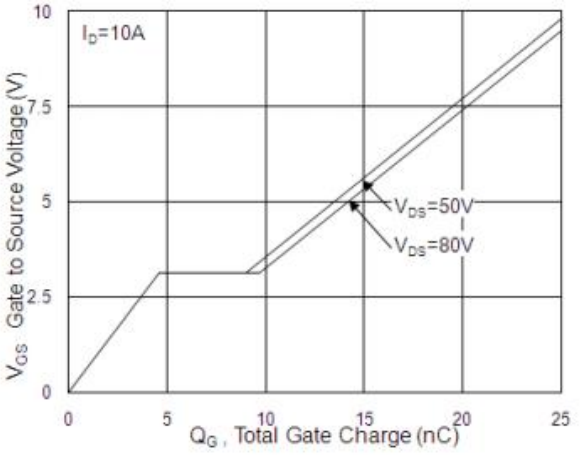
1. The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper.
2. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%
3. The EAS data shows Max. rating . The test condition is VDD=25V,VGS=10V,L=0.1mH,IAS=11A
4. The power dissipation is limited by 150℃ junction temperature
5. The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

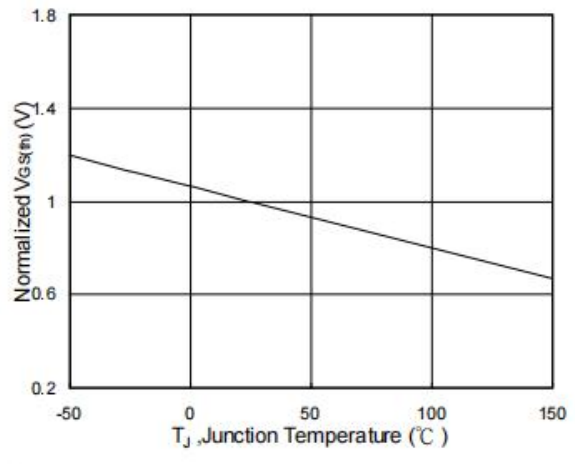
- **TYPICAL CHARACTERISTICS**

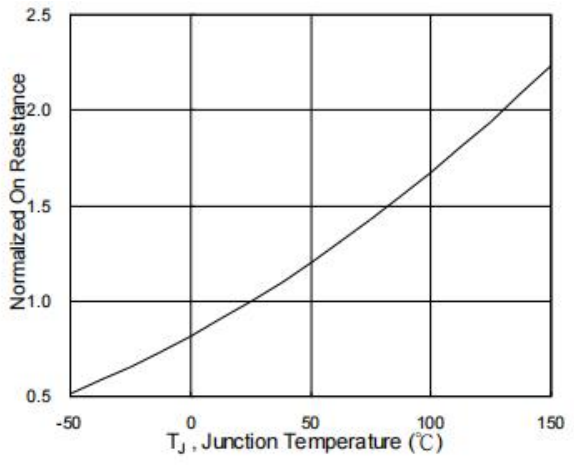












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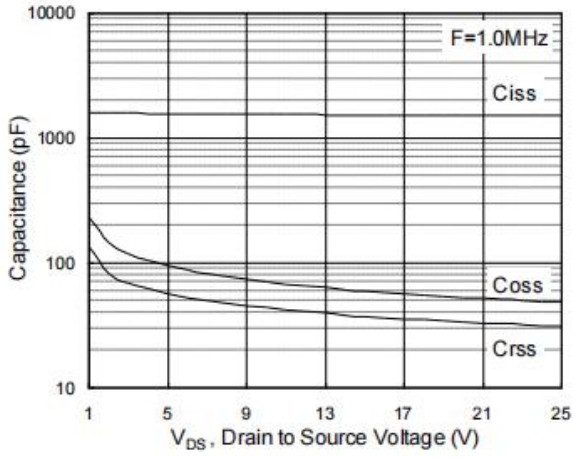
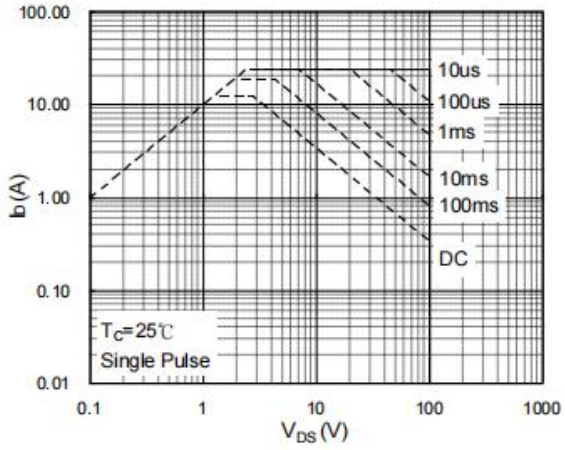
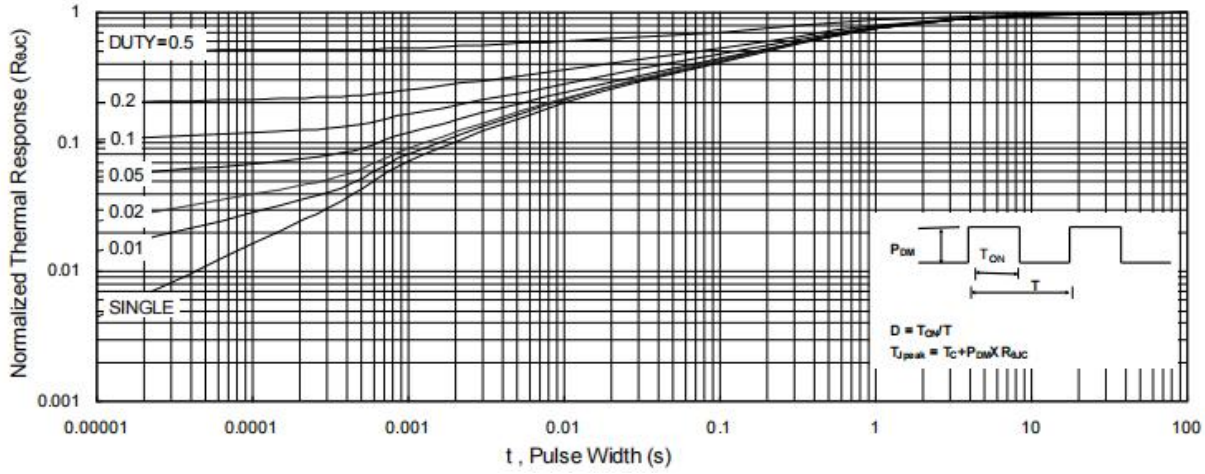
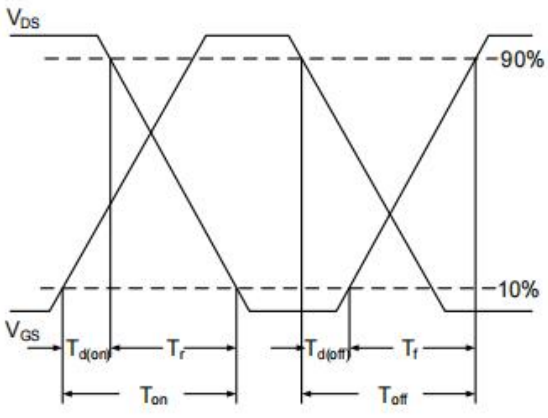
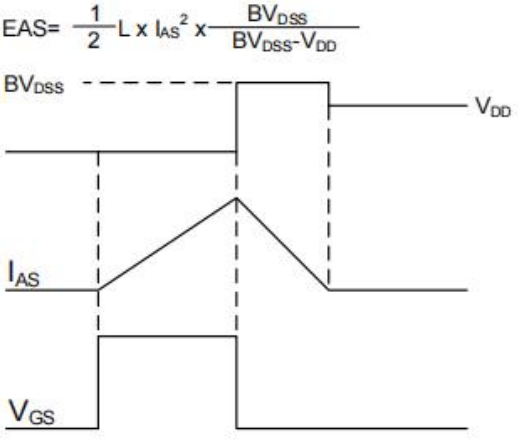




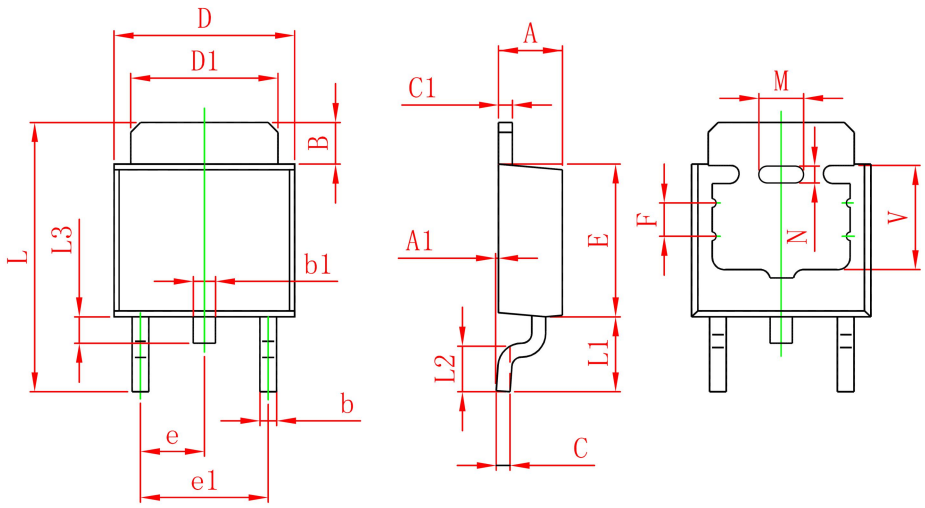






- **Package Information**

TO-252C-2L PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
B	1.350	1.650	0.053	0.065
b	0.500	0.700	0.020	0.028
b1	0.700	0.900	0.028	0.035
c	0.430	0.580	0.017	0.023
c1	0.430	0.580	0.017	0.023
D	6.350	6.650	0.250	0.262
D1	5.200	5.400	0.205	0.213
E	5.400	5.700	0.213	0.224
e	2.300 TYP.		0.091 TYP.	
e1	4.500	4.700	0.177	0.185
F	1.200REF.		0.047REF.	
M	1.600REF.		0.063REF.	
N	0.450REF.		0.018REF.	
L	9.500	9.900	0.374	0.390
L1	2.550	2.900	0.100	0.114
L2	1.400	1.780	0.055	0.070
L3	0.600	0.900	0.024	0.035
V	3.800 REF		0.150 REF	