FS2250

N-Channel 30-V (D-S) MOSFET

● FEATURES

$R_{DS(ON)}$1.6mΩ@VGS=10V TYP

$R_{DS(ON)}$ 2.45mΩ@VGS=4.5V TYP

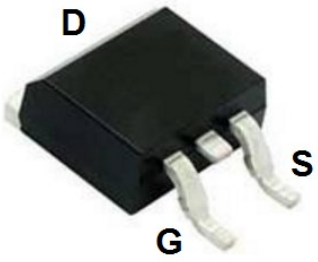
high density cell design for extremely low $R_{DS(ON)}$

Exceptional on-resistance and maximum DC current capability

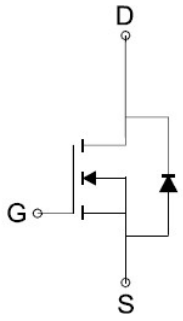
● GENERAL DESCRIPTION

The FS2250 combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$. This device is ideal for load switch and battery protection applications.

● PIN CONFIGURATION



TO263-2



N-Channel MOSFET

● Absolute Maximum Ratings (T_A=25℃ Unless Otherwise Noted)

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		VDSS	30	V
Gate-Source Voltage		VGSS	±20	V
Continuous Drain Current NOTE	TA=25℃	I_D	300	A
	TA=100℃		205	
Pulsed Drain Current NOTE		I_{DM}	1050	
Continuous Drain Current(TJ =150℃)* NOTE	TA=25℃	I_{DSM}	300	A
	TA=70℃		270	
Operating Junction Temperature		TJ	-55 to 150	℃
Thermal Resistance-Junction to Ambient*		RθJA	62.5	℃/W
Thermal Resistance-Junction to Case*		RθJL	0.7	

NOTE:

1、The device mounted on 1in2 FR4 board with 2 oz copper

2、Pulse test ; pulse width ≤300μs, duty cycle≤2%.

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

Symbol	Parameter	Limit	Min	Typ	Max	Unit
STATIC						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V, ID=250μA	30			V
VGS(th)	Gate Threshold Voltage	VDS=VGS, ID=250μA	1.3		2.2	V
IGSS	Gate Leakage Current	VDS=0V, VGS=±20V			±100	nA
IDSS	Zero Gate Voltage Drain Current	VDS=30V, VGS=0V			1	μA
RDS(ON)	Drain-Source On-State Resistance a	VGS=10V, ID= 30A		1.6	2.0	mΩ
		VGS=4.5V, ID= 30A		2.45	3.0	
VSD	Diode Forward Voltage	IS=10A, VGS=0V		0.73	1.1	V
DYNAMIC						
Qg	Total Gate Charge(10V)	VDS=15V, VGS=10V, ID=150A		420		nC
Qg	Total Gate Charge(4.5V)	VDS=15V, VGS=4.5V, ID=150A		220		
Qgs	Gate-Source Charge			800		
Qgd	Gate-Drain Charge			100		
Ciss	Input capacitance	VDS=15V, VGS=0V, f=1.0MHz		3200		pF
Coss	Output Capacitance			1880		
Crss	Reverse Transfer Capacitance			1500		
Rg	Gate-Resistance	VDS=0V, VGS=0V, f=1MHz		0.6		Ω
td(on)	Turn-On Delay Time	VDD=15V, RL =15Ω ID=1A, VGEN=4.5V RG=3Ω		80		ns
tr	Turn-On Rise Time			75		
td(off)	Turn-Off Delay Time			141		
tf	Turn-Off Fall Time			68		

Note:

a: Pulse test: pulse width < =300us, duty cycle < =2%

b: FORSEMI reserves the right to improve product design, functions and reliability without notice.

c. Single pulse width limited by junction temperature TJ(MAX)=150° C.

d. The RqJA is the sum of the thermal impedance from junction to case RqJC and case to ambient.

e. The static characteristics in Figures 1 to 6 are obtained using <300ms pulses, duty cycle 0.5% max.

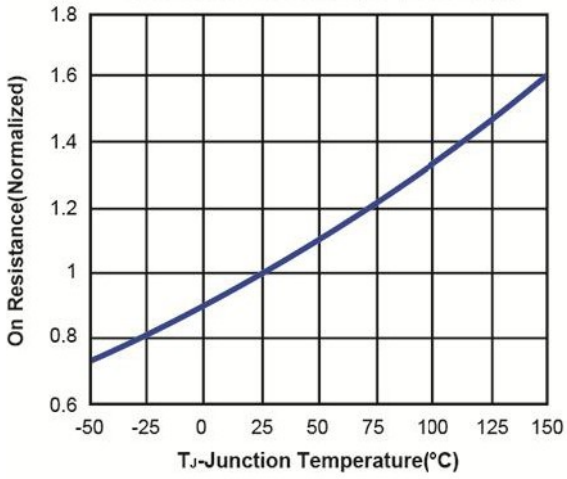
f. These curves are based on the junction-to-case thermal impedance which is measured with the device mounted to a large heatsink, assuming a maximum junction temperature of TJ(MAX)=150° C. The SOA curve provides a single pulse rating.

g. The maximum current rating is package limited.

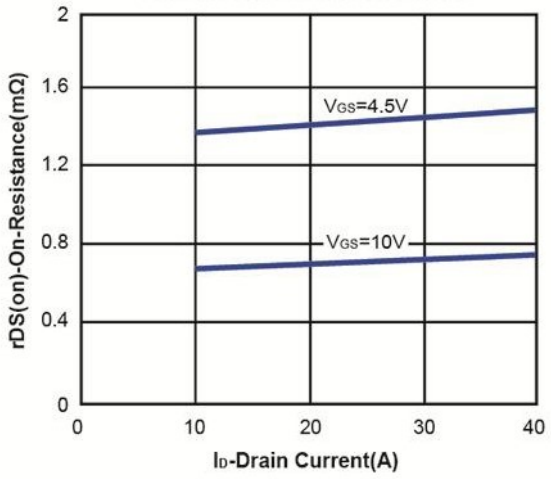
h. These tests are performed with the device mounted on 1 in2 FR-4 board with 2oz. Copper, in a still air environment with TA=25° C.

Typical Characteristics

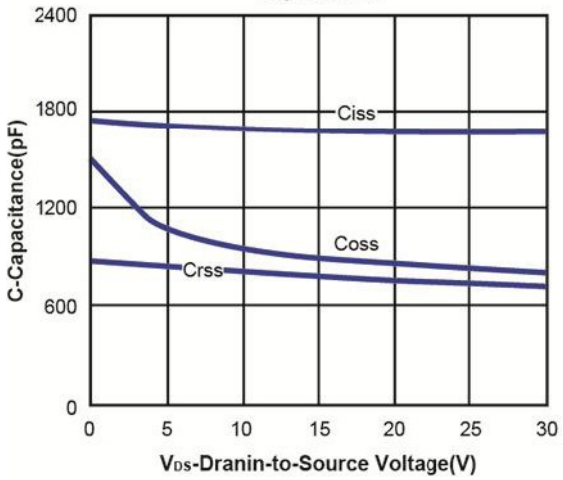
On Resistance vs. Junction Temperature



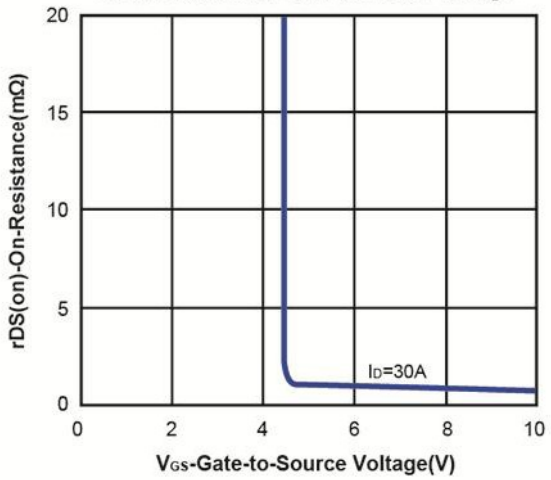
On Resistance vs. Drain Current



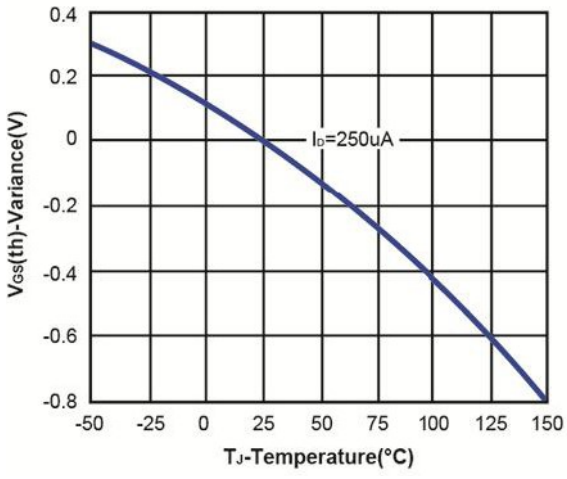
Capacitance



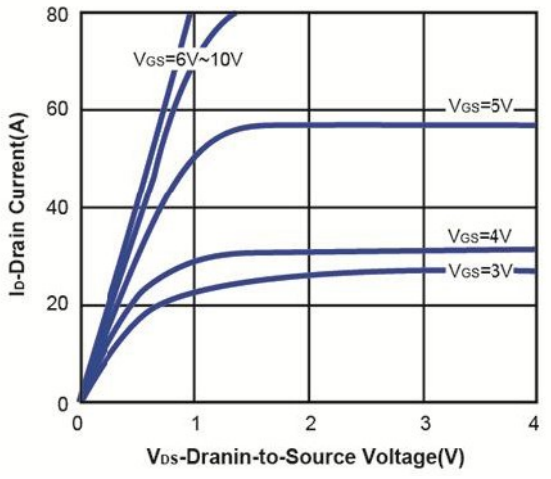
On Resistance vs. Gate-to-Source Voltage



Threshold Voltage

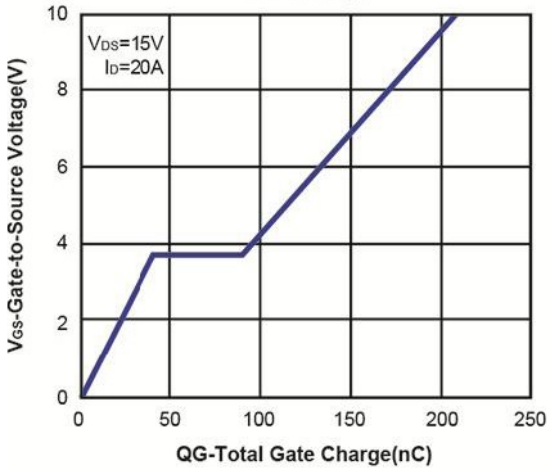


On-Region Characteristics

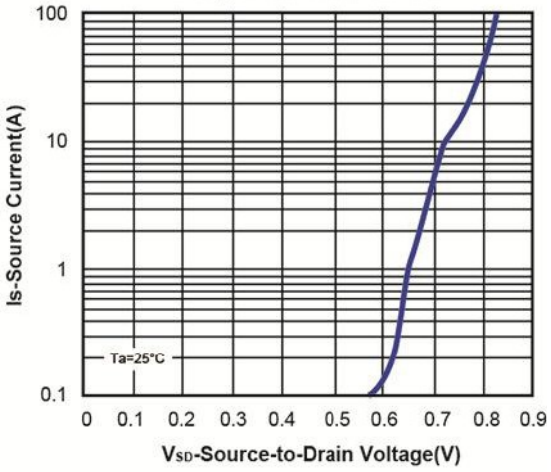


TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

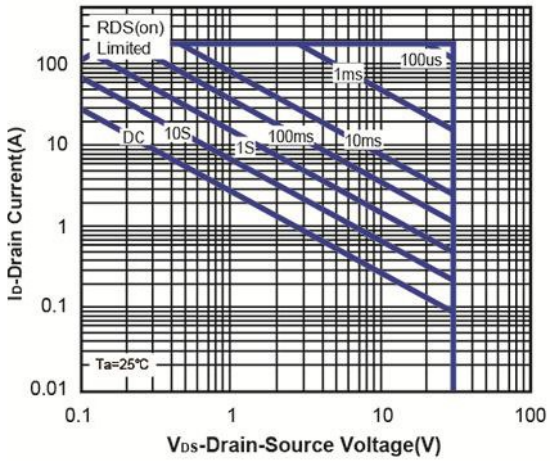
Gate Charge



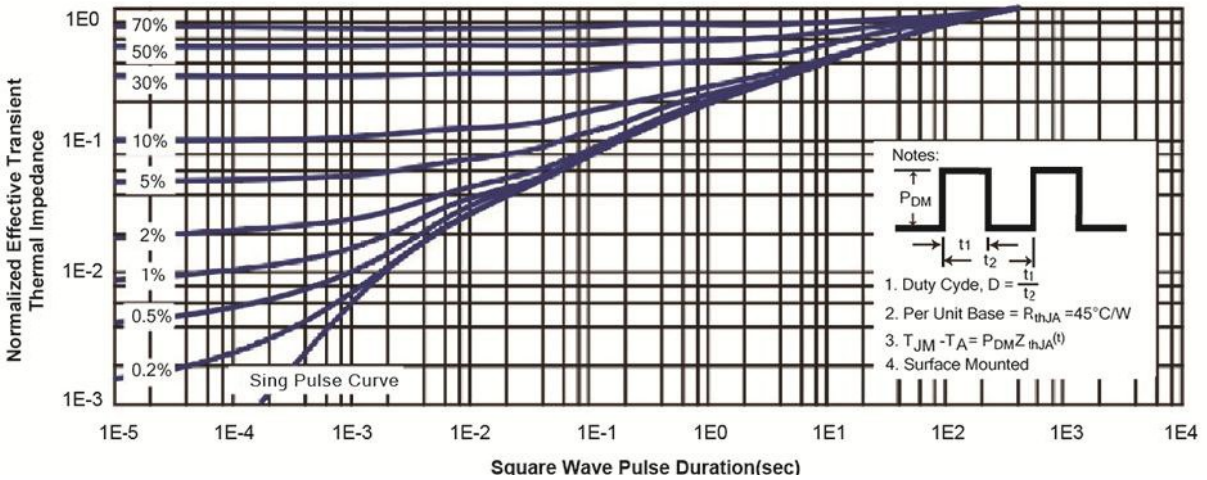
Body-diode characteristics



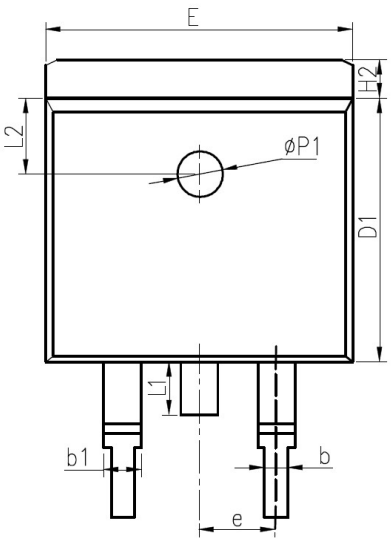
Maximum Forward Biased Safe Operating Area

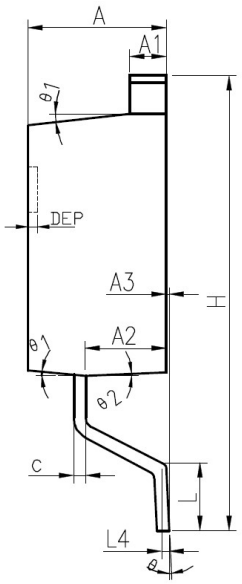


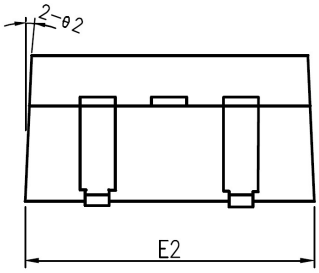
Normalized Thermal Transient Impedance, Junction-to-Ambient



- **PACKAGE TO263-2**







COMMON DIMENSIONS

SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	4.40	4.57	4.70	0.173	0.180	0.185
A1	1.22	1.27	1.32	0.048	0.050	0.052
A2	2.59	2.69	2.79	0.102	0.106	0.110
A3	0.00	0.10	0.20	0.000	0.004	0.008
b	0.77	0.813	0.90	0.030	0.032	0.035
b1	1.20	1.270	1.36	0.047	0.050	0.054
c	0.34	0.381	0.47	0.013	0.015	0.019
D1	8.60	8.70	8.80	0.339	0.343	0.346
E	10.00	10.16	10.26	0.394	0.400	0.404
E2	10.00	10.10	10.20	0.394	0.398	0.402
e		2.54 BSC			0.100 BSC	
H	14.70	15.10	15.50	0.579	0.594	0.610
H2	1.17	1.27	1.40	0.046	0.050	0.055
L	2.00	2.30	2.60	0.079	0.091	0.102
L1	1.45	1.55	1.70	0.057	0.061	0.067
L2		2.50 REF			0.098 REF	
L4		0.25 BSC			0.010 BSC	
	0°	5°	8°	0°	5°	8°
1	5°	7°	9°	5°	7°	9°
2	1°	3°	5°	1°	3°	5°
ΦP1	1.40	1.50	1.60	0.055	0.059	0.063
DEP	0.05	0.10	0.20	0.002	0.004	0.008