N-Channel 100-V (D-S) MOSFET

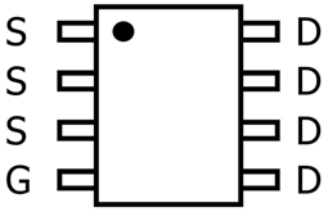
● FEATURES

V_{DS}	100V
I_D (V_{GS}=10V)	3.6A
$R_{DS(ON)}$ (V_{GS}=10V)	<120mΩ
$R_{DS(ON)}$ (V_{GS} = 4.5V)	<145mΩ

● GENERAL DESCRIPTION

The FS4460 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



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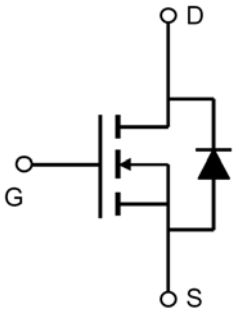


● Absolute Maximum Ratings (T_A=25°C unless otherwise noted

Parameter		Symbol	Maximum	Units
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_A=25°C	I_D	3.6	A
	T_A=70°C		2.9	
Pulsed Drain Current [C]		I_{DM}	14	
Avalanche Current [C]		I_{AS}, I_{AR}	22	A
Avalanche energy L=0.1mH [C]		E_{AS}, E_{AR}	18	mJ
Power Dissipation [B]	T_A=25°C	P_D	3.1	W
	T_A=70°C		2	
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	℃

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
STATIC PARAMETERS						
BV_{DSS}	Drain-Source Breakdown Voltage	I_D=250uA, V_{GS}=0V	100			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=100V, V_{GS}=0V			1	uA
I_{GSS}	Gate-Body leakage current	V_{DS}=0V, V_{GS}=±20V			±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS} I_D=250uA	1		3	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V, I_D=3.6A		95	120	mΩ
		V_{GS}=4.5V, I_D=3.6A		110	145	
V_{SD}	Diode Forward Voltage	I_S=2.3A,V_{GS}=0V		0.8	1.2	V
DYNAMIC PARAMETERS						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=15V, f=1MHz		905		pF
C_{oss}	Output Capacitance			145		
C_{rss}	Reverse Transfer Capacitance			43		
R_g	Gate resistance	V_{GS}=0V, V_{DS}=0V, f=1MHz		1		Ω
SWITCHING PARAMETERS						
Q_g	Total Gate Charge	V_{GS}=10V, V_{DS}=80V, I_D=2.5A		24		nC
Q_g	Total Gate Charge	V_{GS}=4.5V, V_{DS}=80V, I_D=2.5A		14		
Q_{gs}	Gate Source Charge			3.8		
Q_{gd}	Gate Drain Charge			7.5		
$t_{D(on)}$	Turn-On DelayTime	V_{DD}=50V, R_L =10Ω I_D=1A, V_{GEN}=10V R_G=6Ω		15		ns
t_r	Turn-On Rise Time			8		
$t_{D(off)}$	Turn-Off DelayTime			47		
t_f	Turn-Off Fall Time			6		

A. The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C. The value in any given application depends on the user's specific board design.

B. The power dissipation P_D is based on $T_{J(MAX)}$=150°C, using≤10s junction-to-ambient thermal resistance.

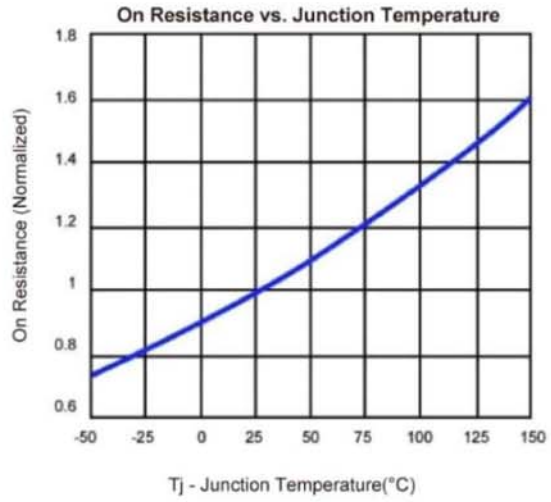
C. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C. Ratings are based on low frequency and duty cycles to keep initialT_J=25°C.

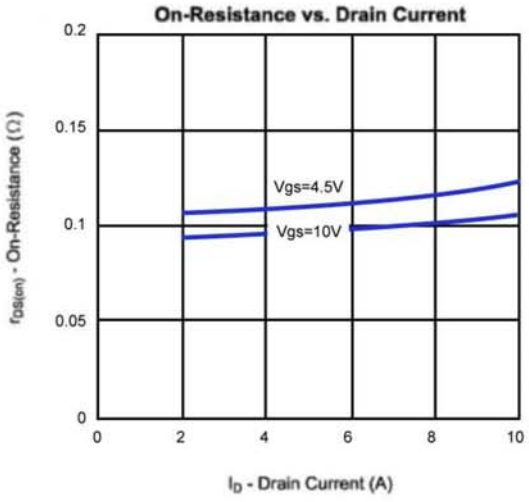
D. The $R_{\theta JA}$ is the sum of the thermal impedence from junction to lead $R_{\theta JL}$ and lead to ambient.

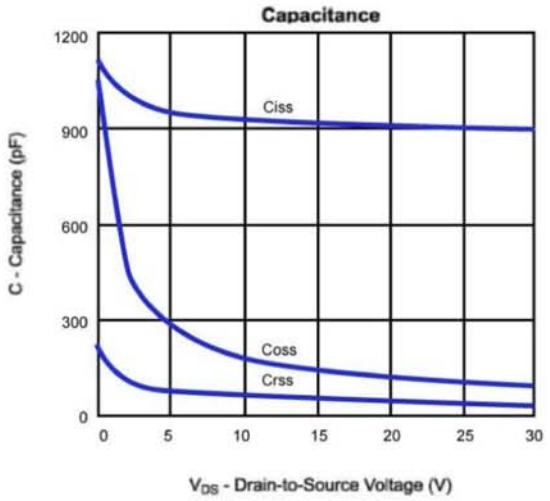
E. The static characteristics in Figures 1 to 6 are obtained using <300us pulses, duty cycle 0.5% max.

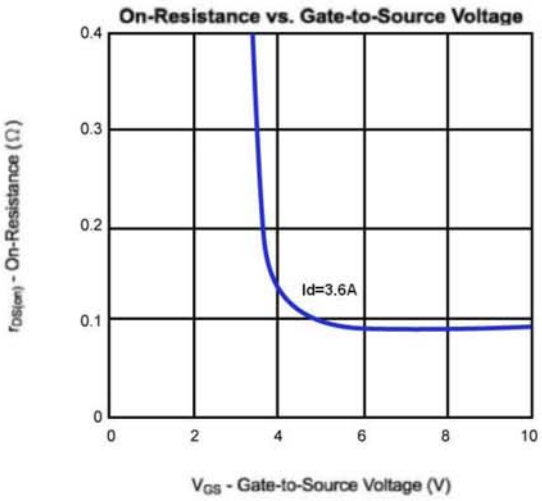
F. These curves are based on the junction-to-ambient thermal impedence which is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, assuming a maximum junction temperature of $T_{J(MAX)}$=150°C. The SOA curve provides a single pulse rating.

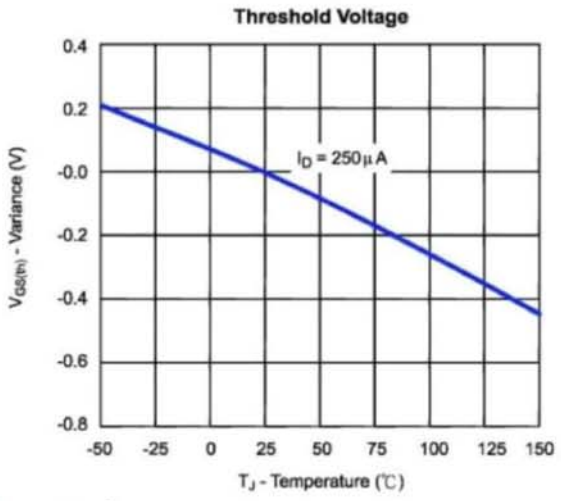
TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

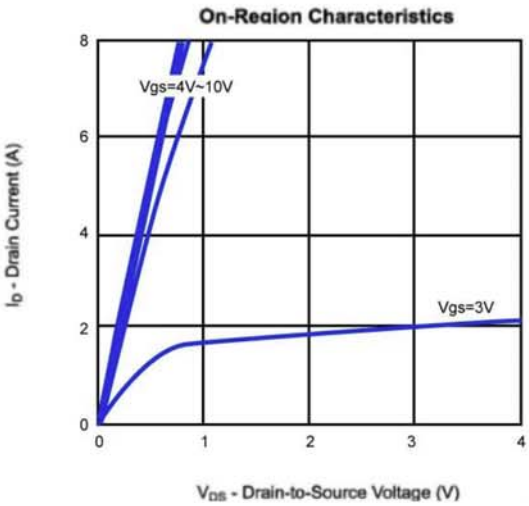












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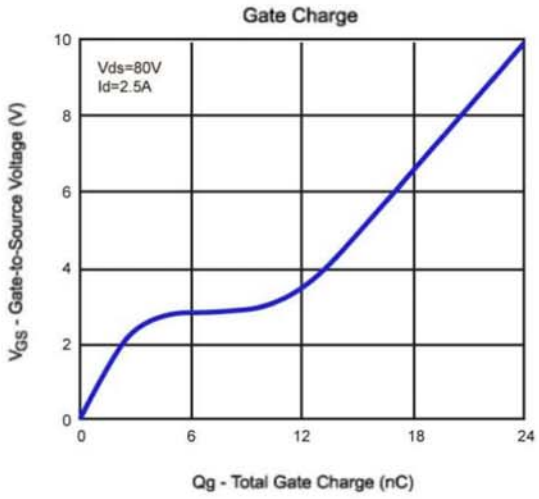

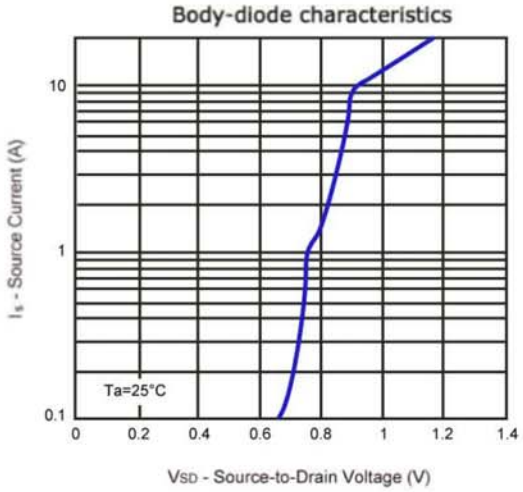

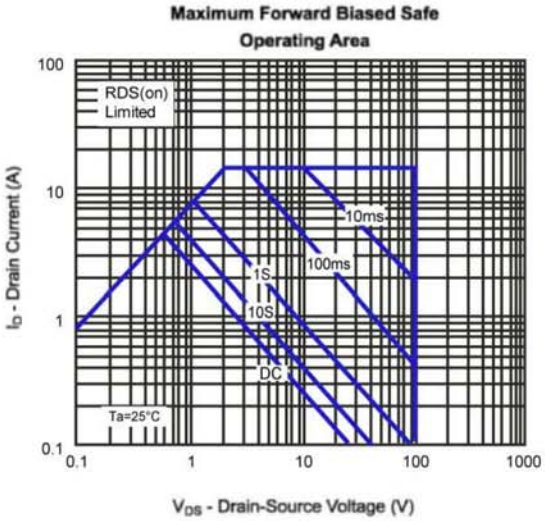

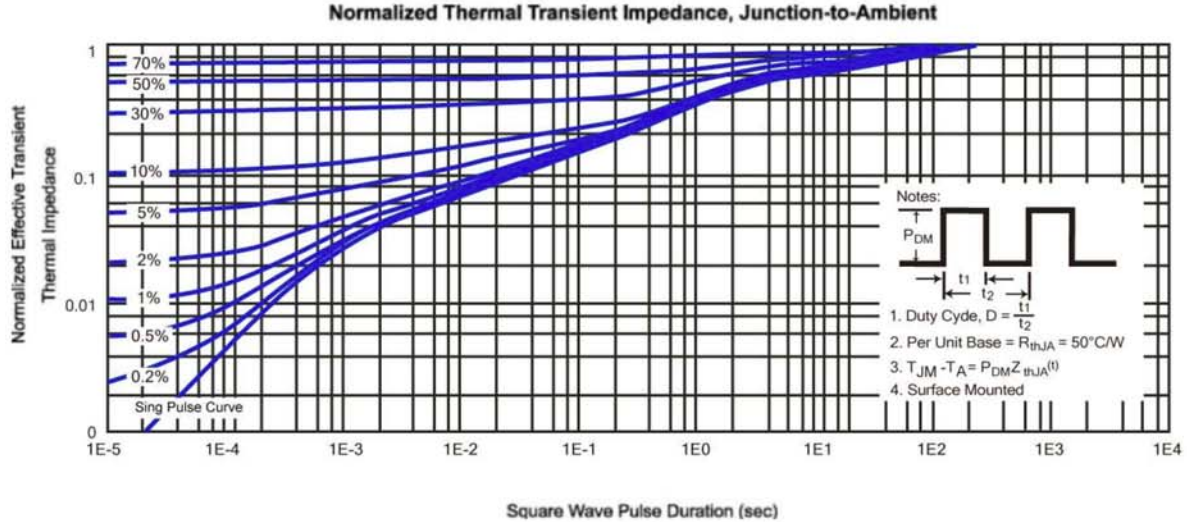

- **Package Information**

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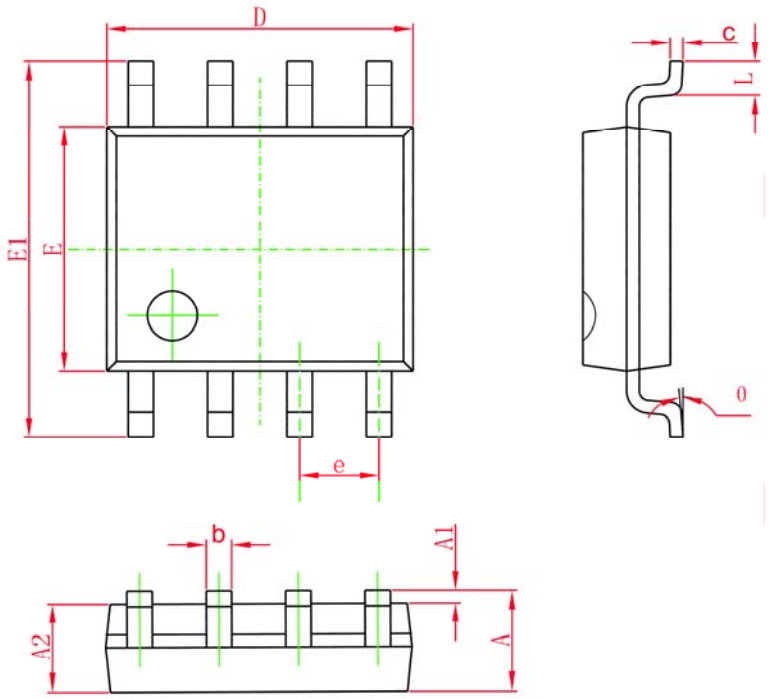

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°