

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

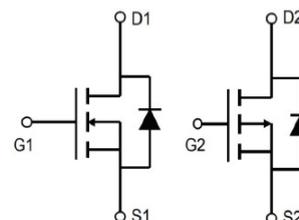
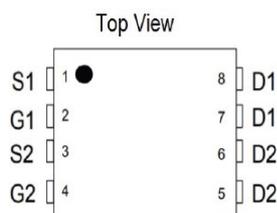
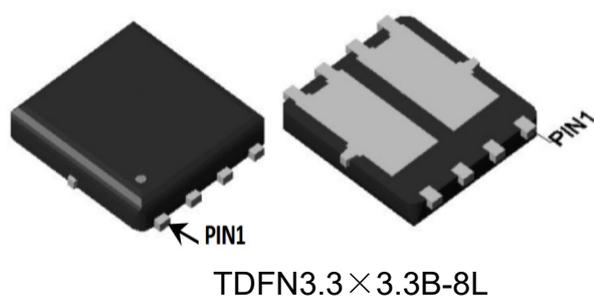
● FEATURES

$R_{DS(ON)} \leq 9.1m\Omega @ V_{GS}=10V$
 $R_{DS(ON)} \leq 13.5m\Omega @ V_{GS}=4.5V$
 high density cell design for extremely low $R_{DS(ON)}$
 Exceptional on-resistance and maximum DC current capability

● GENERAL DESCRIPTION

The FS4486 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



● Absolute Maximum Ratings (TA=25°C Unless Otherwise Noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	VDSS	30	V
Gate-Source Voltage	VGSS	±20	V
Continuous Drain Current(TJ =150°C)*	ID	TA=25°C	30
		TA=70°C	23.5
Pulsed Drain Current	IDM	120	A
Maximum Power Dissipation*	PD	TA=25°C	3.1
		TA=70°C	2.0
Operating Junction Temperature	TJ	-55 to 150	°C
Thermal Resistance-Junction to Ambient*	RθJA	50	°C/W
Thermal Resistance-Junction to Lead*	RθJL	24	

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

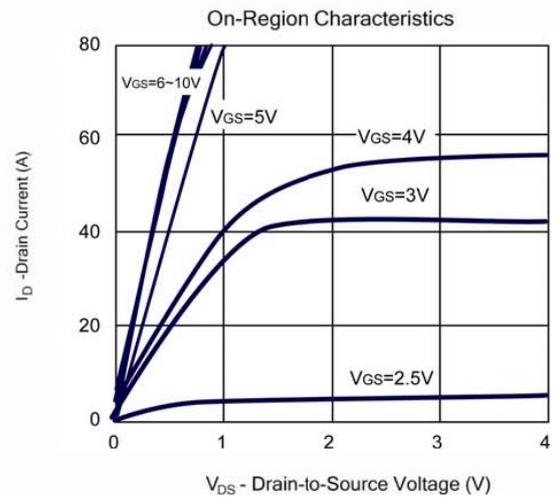
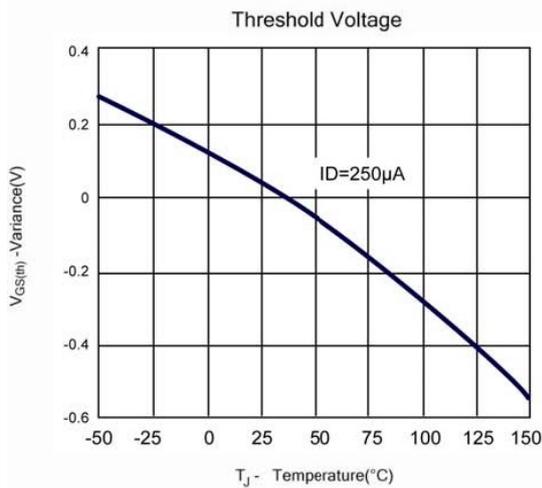
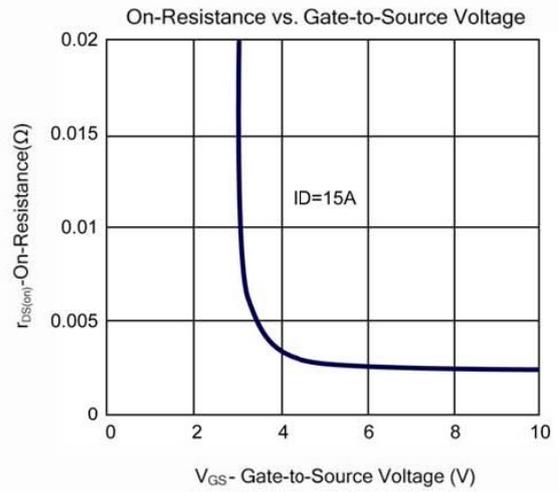
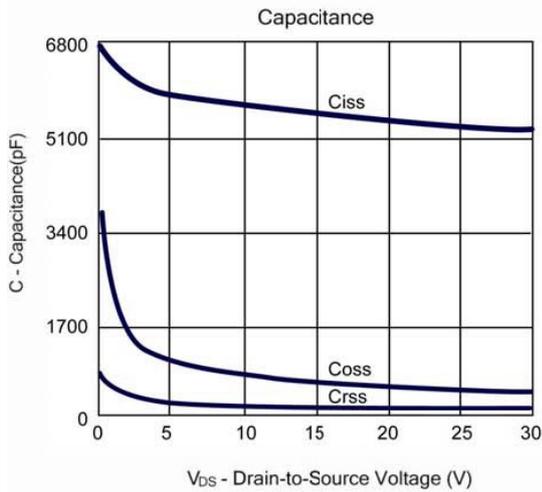
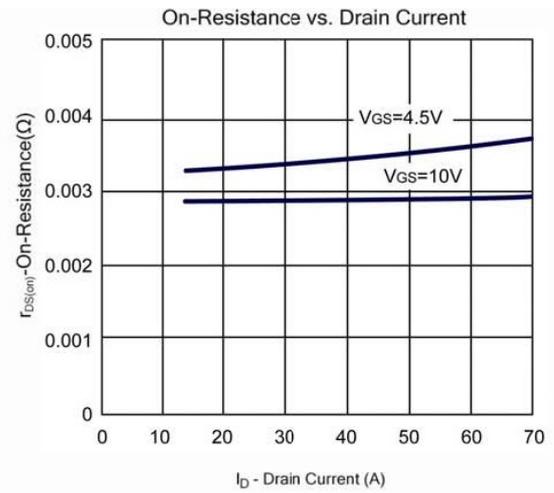
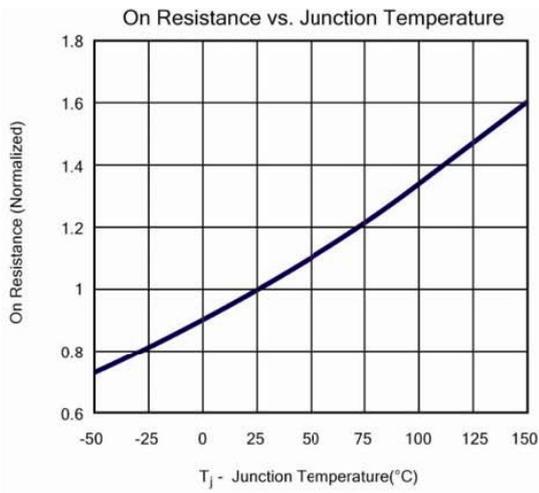
● **Electrical Characteristics** ($T_J=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Limit	Min	Typ	Max	Unit
STATIC						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V, ID=250 μ A	30			V
VGS(th)	Gate Threshold Voltage	VDS=VGS, ID=250 μ A	1.55		2.7	V
IGSS	Gate Leakage Current	VDS=0V, VGS= \pm 20V			\pm 100	nA
IDSS	Zero Gate Voltage Drain Current	VDS=30V, VGS=0V			1	μ A
RDS(ON)	Drain-Source On-State Resistance a	VGS=10V, ID= 10A		7.9	9.1	m Ω
		VGS=4.5V, ID= 7.5A		9.7	13.5	
VSD	Diode Forward Voltage	IS=2.7A, VGS=0V		0.72	1.1	V
DYNAMIC						
Qg	Total Gate Charge(10V)	VDS=15V, VGS=10V, ID=17A		55		nC
Qg	Total Gate Charge(4.5V)	VDS=15V, VGS=4.5V, ID=17A		29		
Qgs	Gate-Source Charge			10		
Qgd	Gate-Drain Charge			15		
Ciss	Input capacitance	VDS=15V, VGS=0V, f=1.0MHz		3200		pF
Coss	Output Capacitance			550		
Crss	Reverse Transfer Capacitance			210		
Rg	Gate-Resistance	VDS=0V, VGS=0V, f=1MHz		1.2		Ω
td(on)	Turn-On Delay Time	VDD=15V, RL =15 Ω ID=1A, VGEN=10V RG=6 Ω		23		ns
tr	Turn-On Rise Time			12		
td(off)	Turn-Off Delay Time			86		
tf	Turn-Off Fall Time			12		

Note:

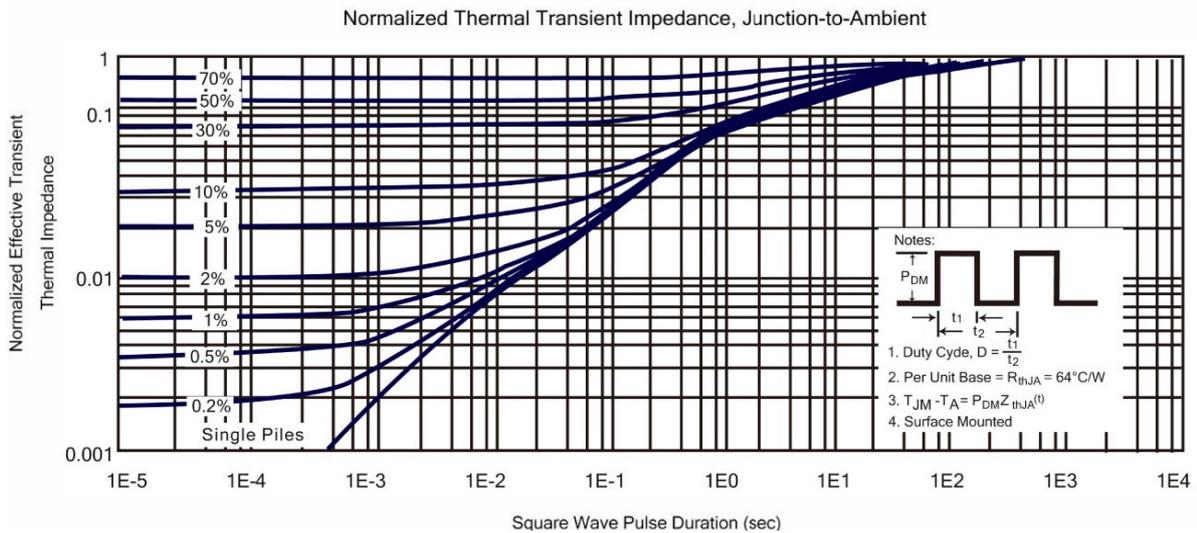
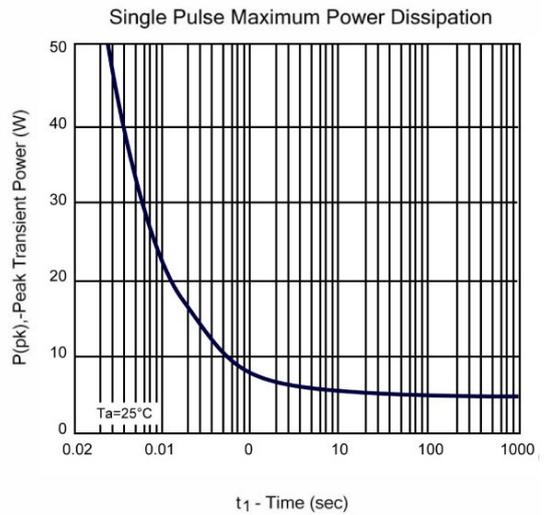
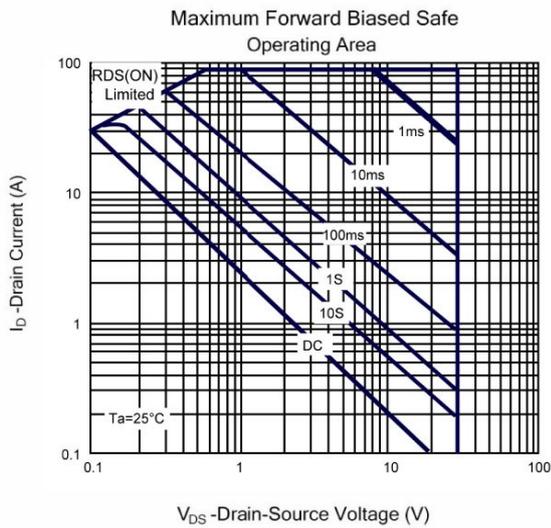
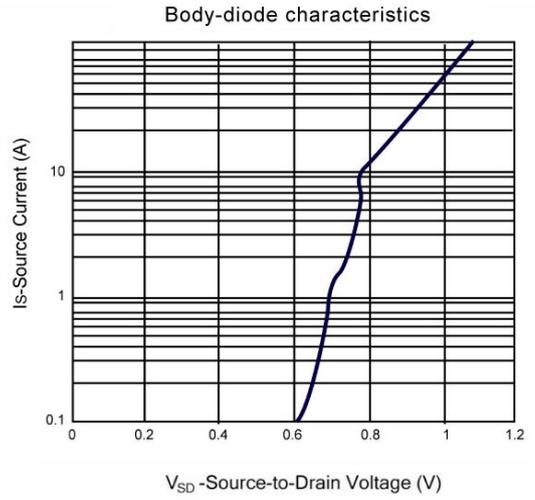
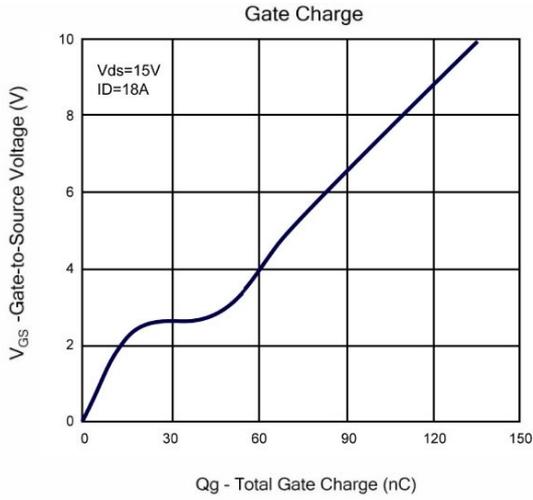
- The value of RqJA is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with TA =25° C. The Power dissipation PDSM is based on R qJA t \leq 10s and the maximum allowed junction temperature of 150° C. The value in any given application depends on the user's specific board design.
- The power dissipation PD is based on TJ(MAX)=150° C, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heatsinking is used.
- Single pulse width limited by junction temperature TJ(MAX)=150° C.
- The RqJA is the sum of the thermal impedance from junction to case RqJC and case to ambient.
- The static characteristics in Figures 1 to 6 are obtained using <300ms pulses, duty cycle 0.5% max.
- 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.
- The maximum current rating is package limited.
- 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.

FS4486



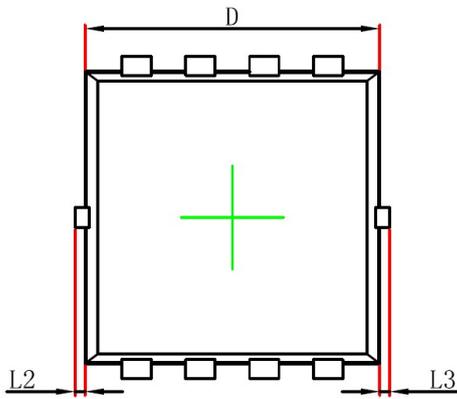
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TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

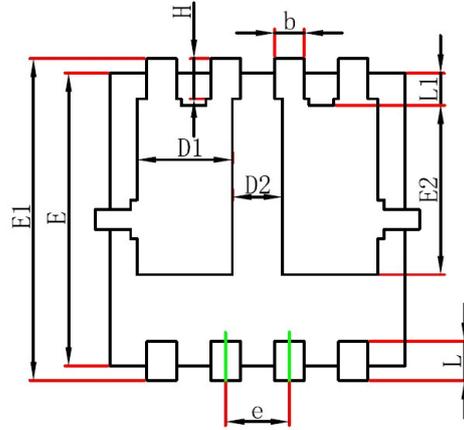


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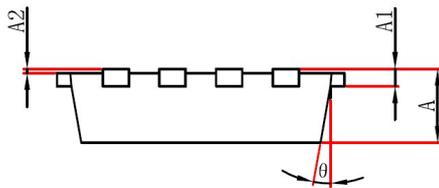
● PACKAGE TDFN3.3×3.3B-8L



Top View



Bottom View



Side View

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.650	0.850	0.026	0.033
A1	0.152 REF.		0.006 REF.	
A2	0~0.05		0~0.002	
D	2.900	3.100	0.114	0.122
D1	0.935	1.135	0.037	0.045
D2	0.280	0.480	0.011	0.019
E	2.900	3.100	0.114	0.122
E1	3.150	3.450	0.124	0.136
E2	1.535	1.935	0.060	0.076
b	0.200	0.400	0.008	0.016
e	0.550	0.750	0.022	0.030
L	0.300	0.500	0.012	0.020
L1	0.180	0.480	0.007	0.019
L2	0~0.100		0~0.004	
L3	0~0.100		0~0.004	
H	0.315	0.515	0.012	0.020
θ	9°	13°	9°	13°