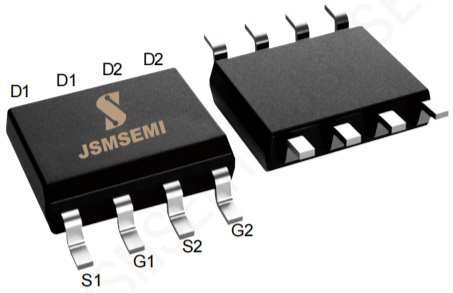
DESCRIPTION

The IRF7306 is N channel enhancement mode power effect transitor which is produced using high cell density advanced trench technology.

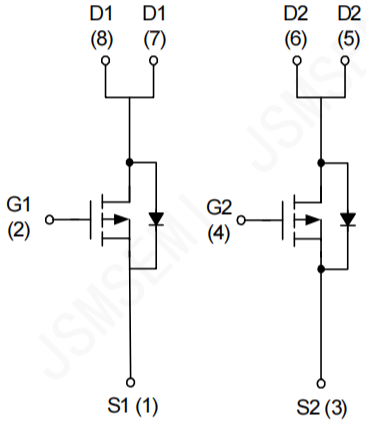
The high density process is especially able to minize on-state resistance.These devices are.

especially suited for low voltage application power management DC-DC converters.



FEATURE

- -30V/-6.5A ,
  $R_{DS(ON)}$=36mΩ(typ.) @ V_{GS}=-10V
  $R_{DS(ON)}$=50mΩ(typ.) @ V_{GS}=-4.5V
- Reliable and Rugged
- Lead Free and Green Device Available (RoHS Compliant)



P-Channel MOSFET

APPLICATIONS

- Power Management in Notebook Computer, Portable Equipment and Battery Powered Systems

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

Symbol	Parameter		Rating	Unit
V_{DSS}	Drain-Source Voltage		-30	V
V_{GSS}	Gate-Source Voltage		±20	
I_D*	Continuous Drain Current	V_{GS}=-10V	-6.5	A
I_{DM}*	Pulsed Drain Current		-20	
I_S*	Diode Continuous Forward Current		-2	A
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	
P_D*	Power Dissipation for Single Operation	T_A=25°C	2	W
		T_A=100°C	0.8	
$R_{\theta JA}$*	Thermal Resistance-Junction to Ambient		62.5	°C/W

Note: *Surface Mounted on 1in^2 pad area, t ≤ 10sec.

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

Symbol	Parameter	Test Condition	IRF7306TRPBF			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250μA	-30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-24V, V_{GS}=0V	-	-	-1	μA
		T_J=85°C	-	-	-30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250μA	-1	-1.5	-2.3	V
I_{GSS}	Gate Leakage Current	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
$R_{DS(ON)}$ [a]	Drain-Source On-state Resistance	V_{GS}=-10V, I_{DS}=-6.5A	-	36	45	mΩ
		V_{GS}=-4.5V, I_{DS}=-5.6A	-	50	65	
V_{SD} [a]	Diode Forward Voltage	I_{SD}=-1.7A, V_{GS}=0V	-	-0.8	-1.3	V
Gate Charge Characteristics [b]						
Q_g	Total Gate Charge	V_{DS}=-15V, V_{GS}=-10V, I_{DS}=-4.9A	-	11.6	16	nC
Q_{gs}	Gate-Source Charge		-	1.3	-	
Q_{gd}	Gate-Drain Charge		-	2.5	-	
Dynamic Characteristics [b]						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz	-	8	-	Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=-15V, Frequency=1.0MHz	-	625	-	pF
C_{oss}	Output Capacitance		-	100	-	
C_{rss}	Reverse Transfer Capacitance		-	60	-	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=-15V, R_L=15Ω, I_{DS}=-1A, V_{GEN}=-10V, R_G=6Ω	-	6	12	ns
t_r	Turn-on Rise Time		-	12	23	
$t_{d(OFF)}$	Turn-off Delay Time		-	25	46	
t_f	Turn-off Fall Time		-	6	12	
t_{rr}	Reverse Recovery Time	I_{DS}=-4.9A, dI_{SD}/dt=100A/μs	-	14	-	ns
Q_{rr}	Reverse Recovery Charge		-	5	-	nC

Notes:

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

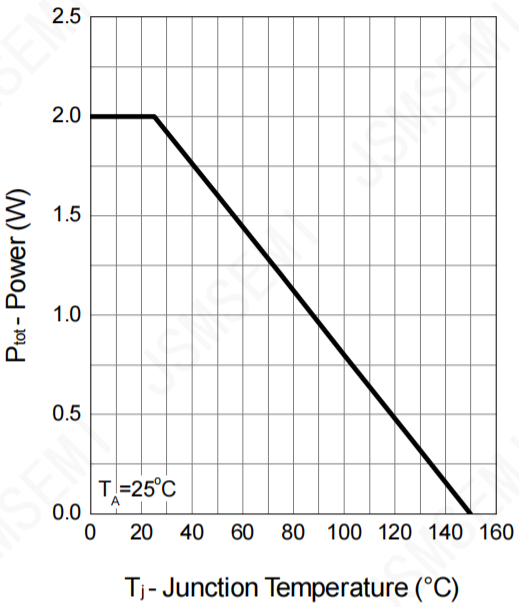
b : Guaranteed by design, not subject to production testing.

Ordering Information

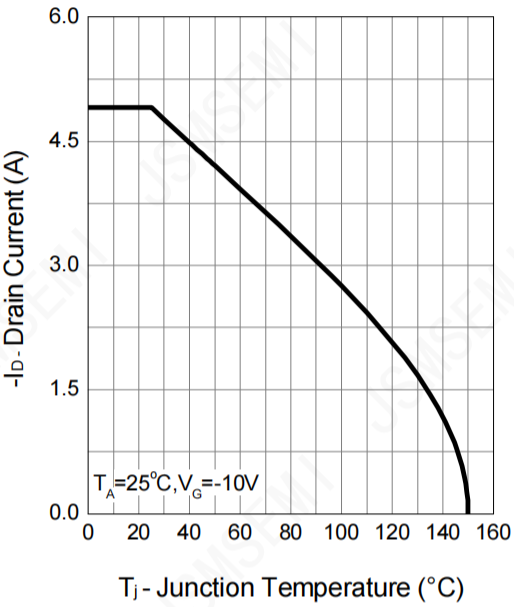
Order number	Package	Marking	Operation Temperature Range	MSL Grade	Ship,Quantity	Green
IRF7306TRPBF-JSM	SOP-8	F7306	-55 to 150°C	1	T&R,3000	Rohs

Typical Characteristics

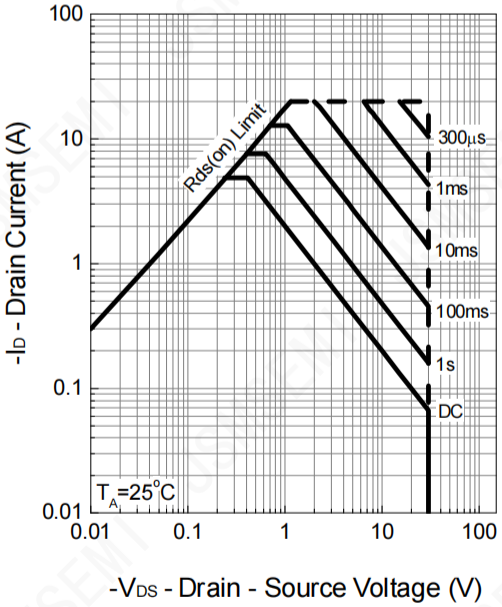
Power Dissipation



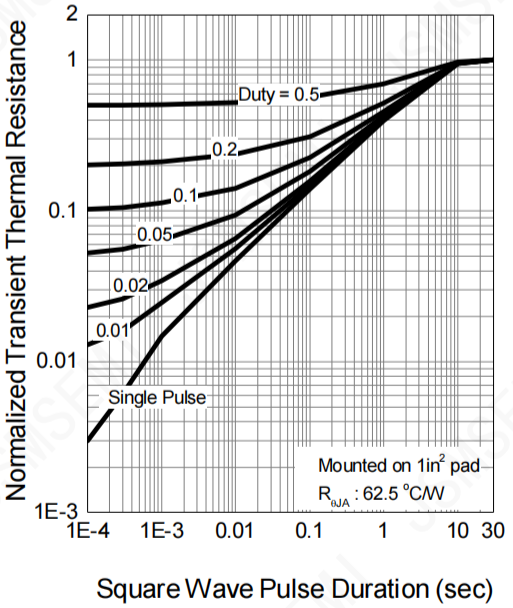
Drain Current



Safe Operation Area

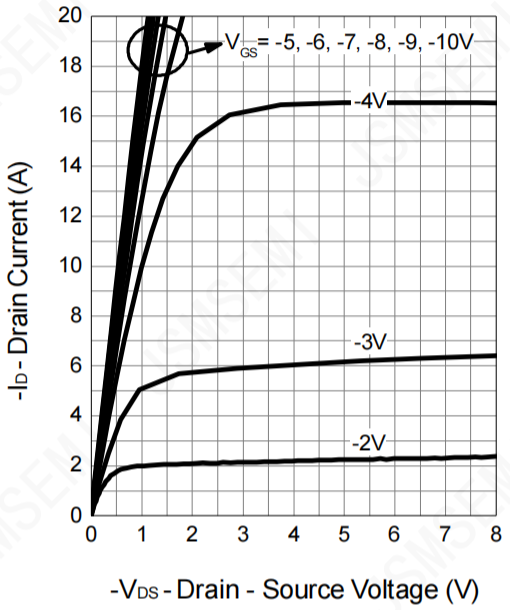


Thermal Transient Impedance

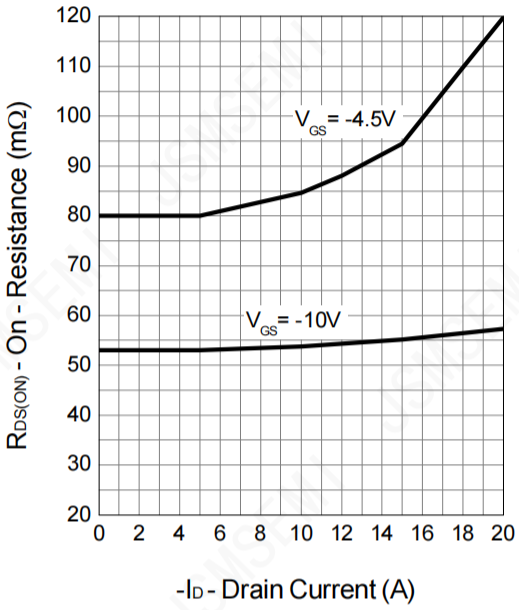


Typical Characteristics (Cont.)

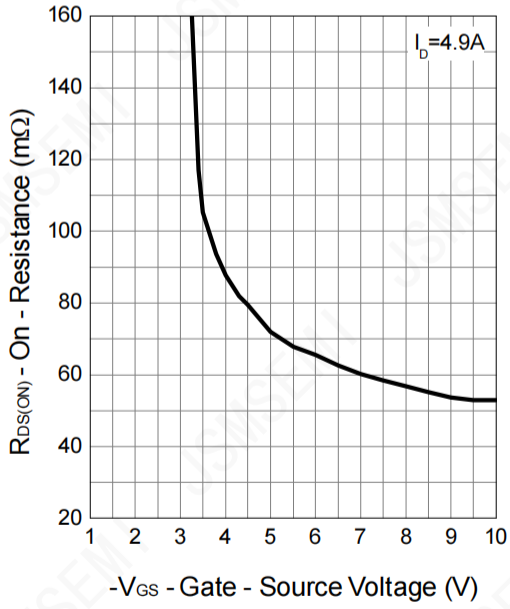
Output Characteristics



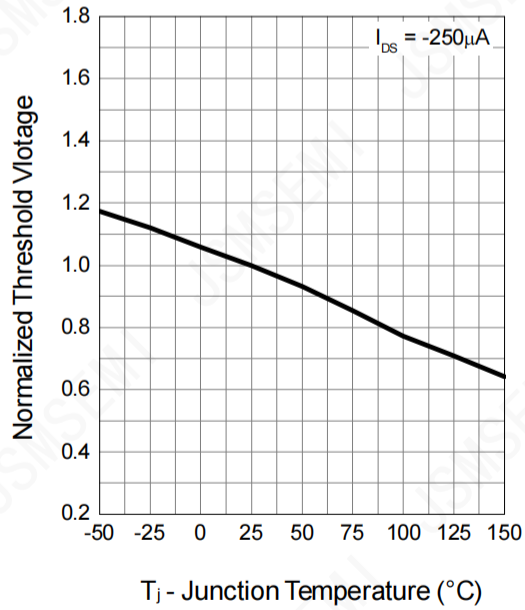
Drain-Source On Resistance



Drain-Source On Resistance

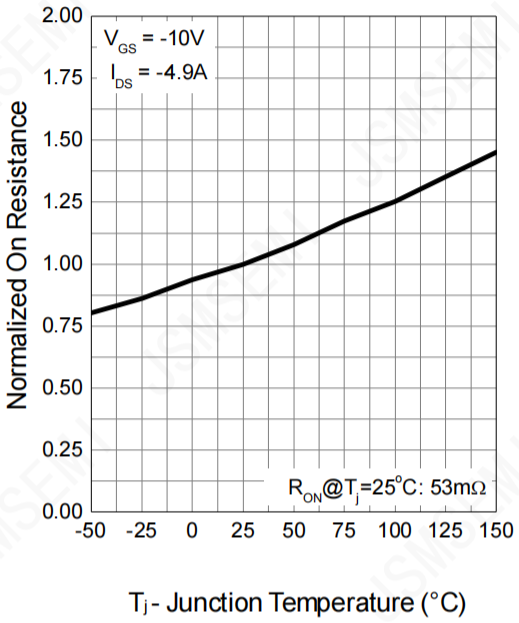


Gate Threshold Voltage

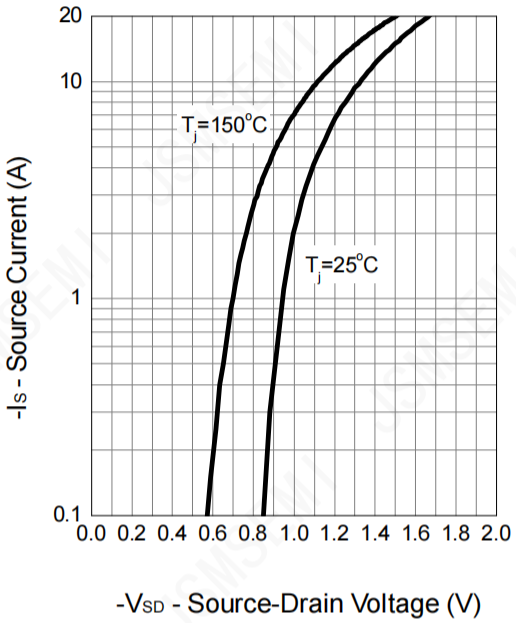


Typical Characteristics (Cont.)

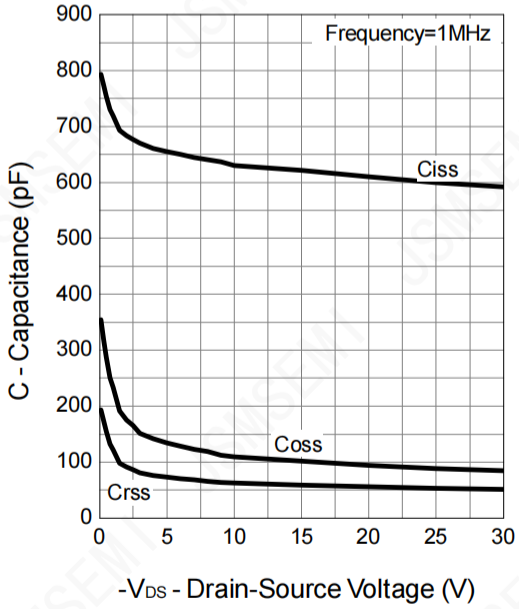
Drain-Source On Resistance



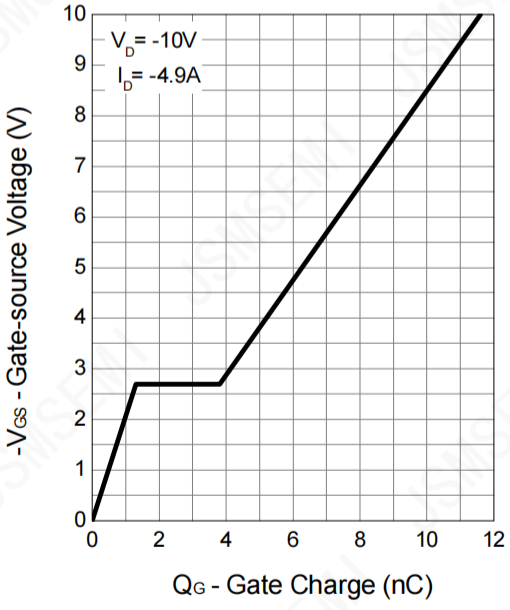
Source-Drain Diode Forward



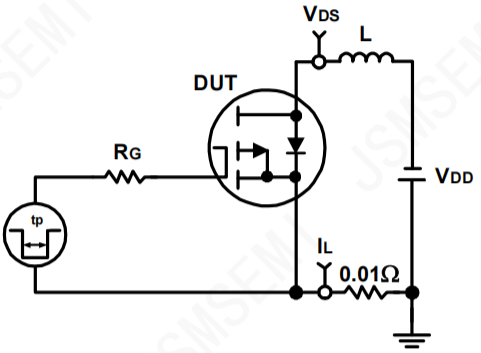
Capacitance

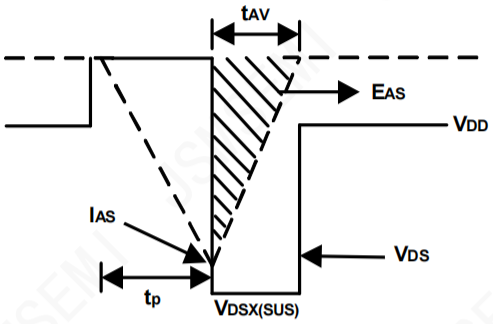


Gate Charge

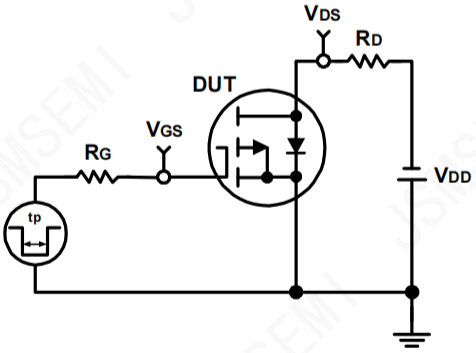


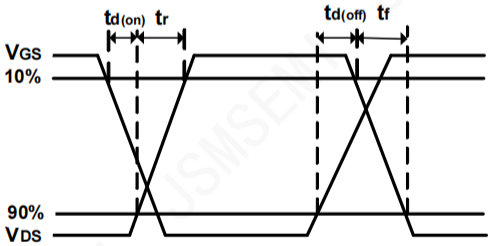
Avalanche Test Circuit and Waveforms



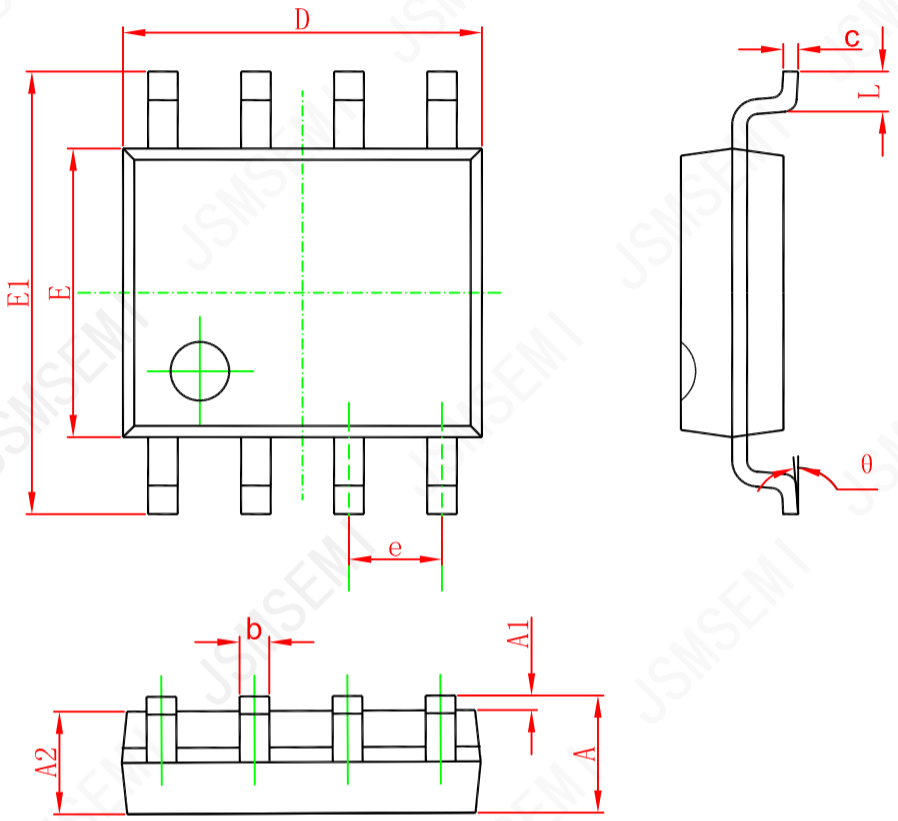


Switching Time Test Circuit and Waveforms





■ *SOP8 PACKAGE OUTLINE DIMENSIONS*



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°