

-30V P-Channel Mosfet

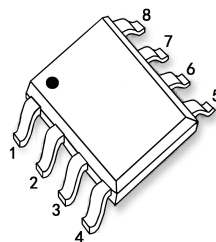
FEATURES

- $R_{DS(ON)} \leq 12m\Omega$ (8m Ω Typ.)
@ $V_{GS} = -10V$
- $R_{DS(ON)} \leq 15m\Omega$ (10.2m Ω Typ.) @ $V_{GS} = -4.5V$

APPLICATIONS

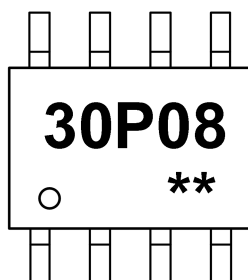
- Power management
- Load switch

SOP-8

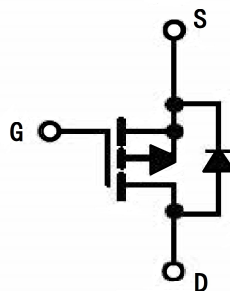


1: S 3: S 5: D 7: D
2: S 4: G 6: D 8: D

MARKING



P-CHANNEL MOSFET



MAXIMUM RATINGS (Ta=25°C unless otherwise noted)

Symbol	Parameter	Max.	Units
V_{DSS}	Drain-Source Voltage	-30	V
V_{GSS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current	-15	A
I_{DM}	Pulsed Drain Current ^{note1}	-80	A
P_D	Power Dissipation	3.1	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient ^{note2}	40	°C/W
T_{STG}	Storage Temperature Range	-55 to +150	°C

MOSFET ELECTRICAL CHARACTERISTICS Ta=25 °C unless otherwise specified

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V,I _D = -250μA	-30	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = -30V,V _{GS} = 0V	-	-	-1	μA
I _{GSS}	Gate to Body Leakage Current	V _{GS} = ±20V,V _{DS} = 0V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} ,I _D = -250μA	-1	-1.6	-2.5	V
R _{DS(on)}	Static Drain-Source On-Resistance	V _{GS} =-10V, I _D =-15A	-	8	12	mΩ
		V _{GS} =-4.5V, I _D =-10A	-	10.2	15	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =-15V, V _{GS} = 0V f = 1.0MHz	-	2900	-	pF
C _{oss}	Output Capacitance		-	410	-	pF
C _{rss}	Reverse Transfer Capacitance			280	-	pF
Q _g	Total Gate Charge	V _{DS} =-15V, I _D =-10A, V _{GS} =-10V	-	48	-	nC
Q _{gs}	Gate-Source Charge		-	12	-	nC
Q _{gd}	Gate-Drain(“Miller”) Charge		-	14	-	nC
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{GS} = -10V, V _{DS} =-15V I _D =-10A, R _G =3Ω	-	15	-	ns
t _r	Turn-On Rise Time		-	11	-	ns
t _{d(off)}	Turn-Off Delay Time		-	44	-	ns
t _f	Turn-Off Fall Time		-	21	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
g _{fs}	Forward Transconductance	V _{DS} =-10V,I _D =-15A	30	-	-	S
V _{SD}	Drain to Source Diode Forward Voltage ^{note3}	V _{GS} = 0V, I _S =-2A,	-	-	-1.2	V

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.

TYPICAL PERFORMANCE CHARACTERISTICS

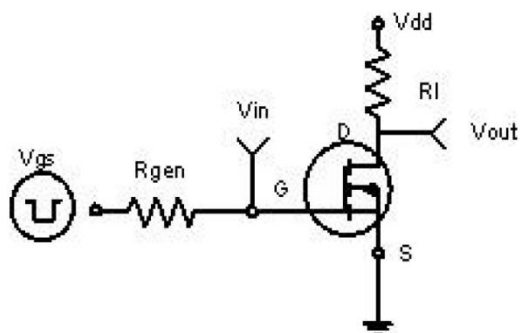


Figure 1 Switching Test Circuit

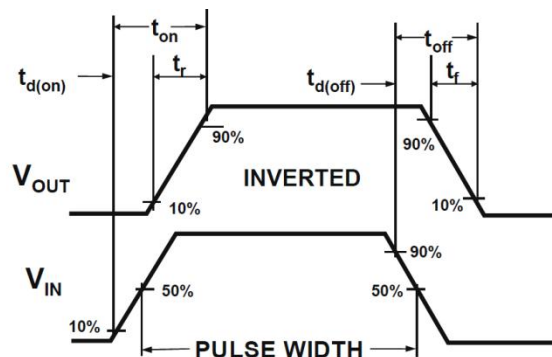


Figure 2 Switching Waveforms

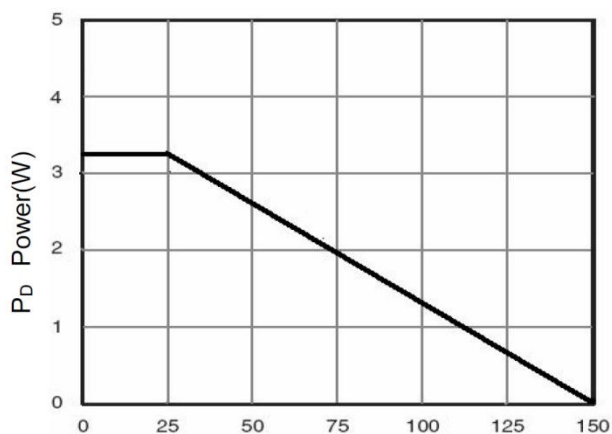


Figure 3 Power Dissipation

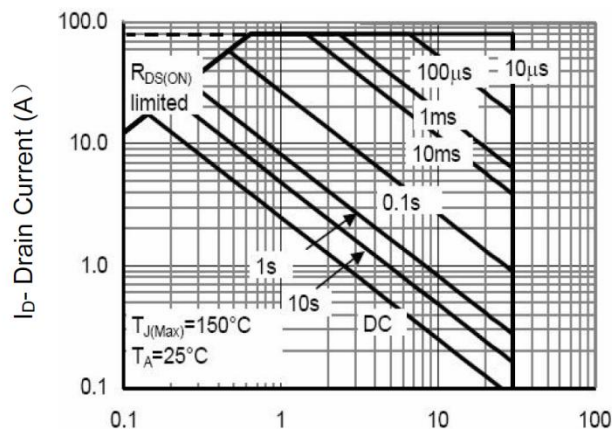


Figure 4 Safe Operation Area

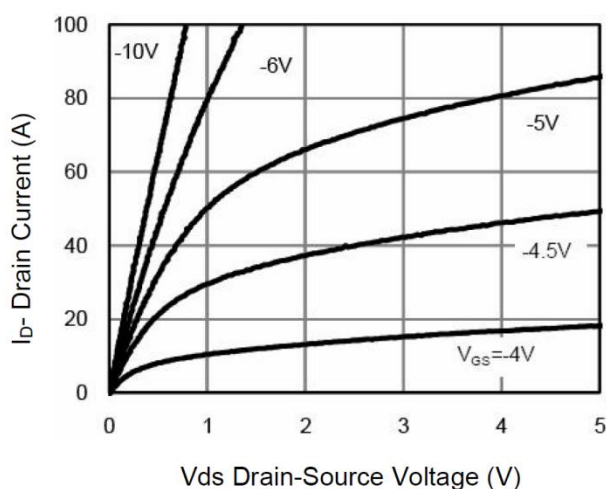


Figure 5 Output Characteristics

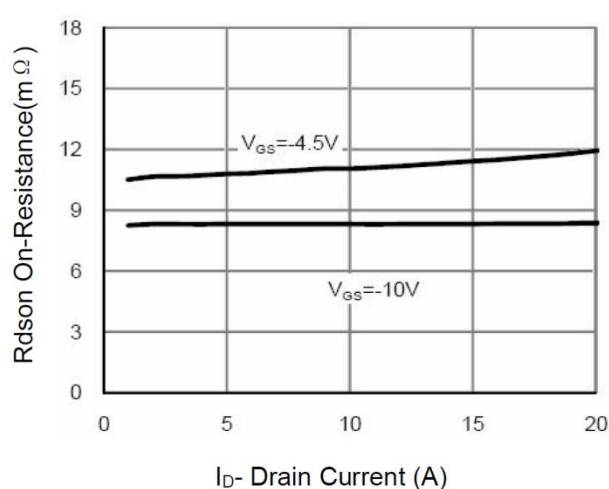


Figure 6 Drain-Source On-Resistance

TYPICAL PERFORMANCE CHARACTERISTICS (cont.)

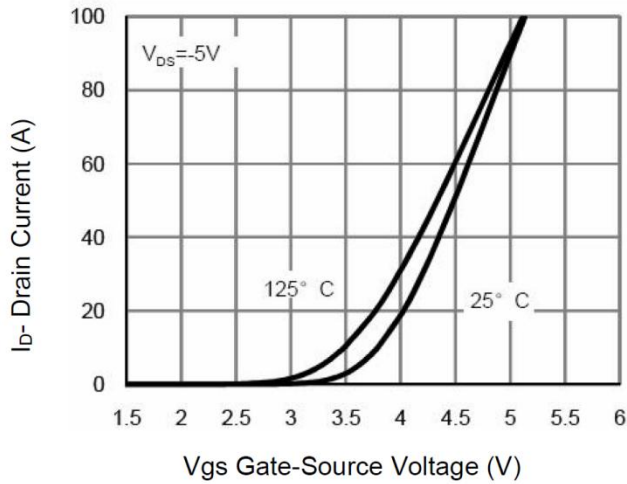


Figure 7 Transfer Characteristics

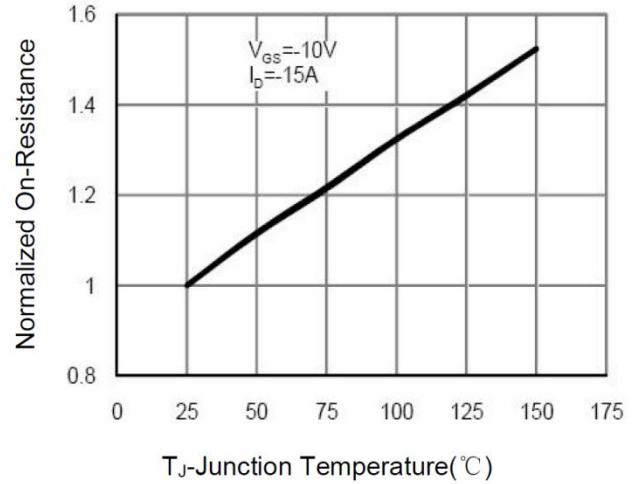


Figure 8 Drain-Source On-Resistance

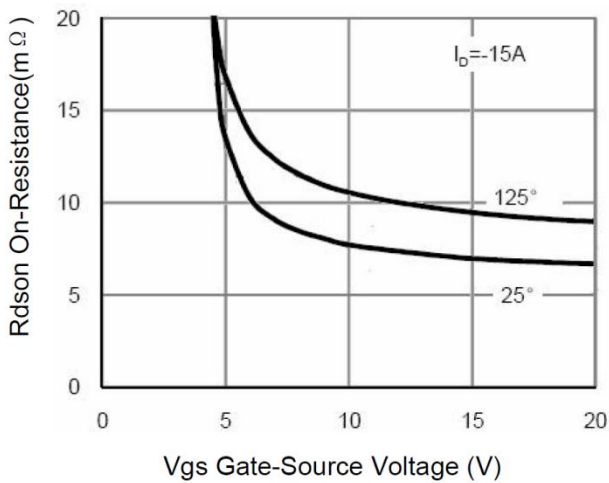


Figure 9 $R_{DS(on)}$ vs V_{GS}

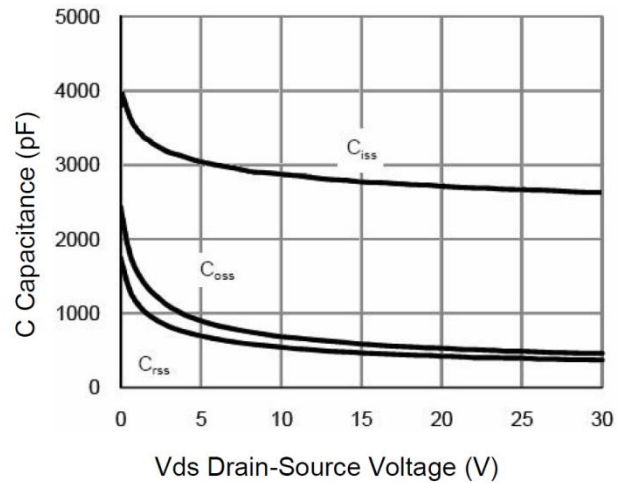


Figure 10 Capacitance vs V_{DS}

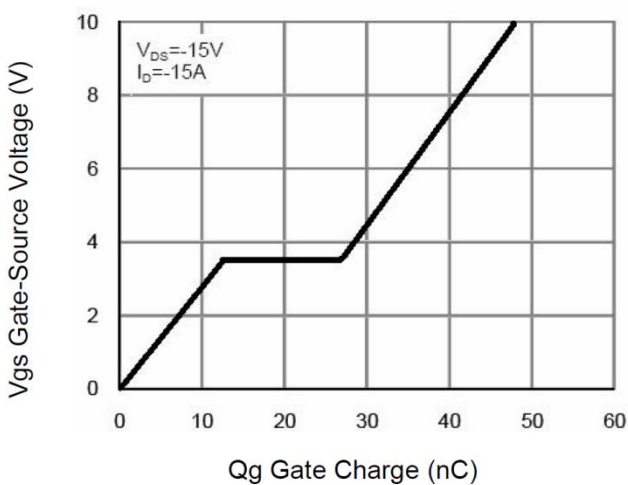


Figure 11 Gate Charge

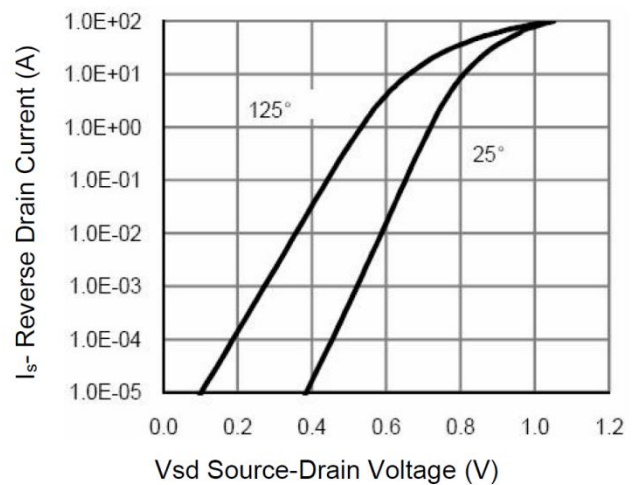


Figure 12 Source- Drain Diode Forward

TYPICAL PERFORMANCE CHARACTERISTICS (cont.)

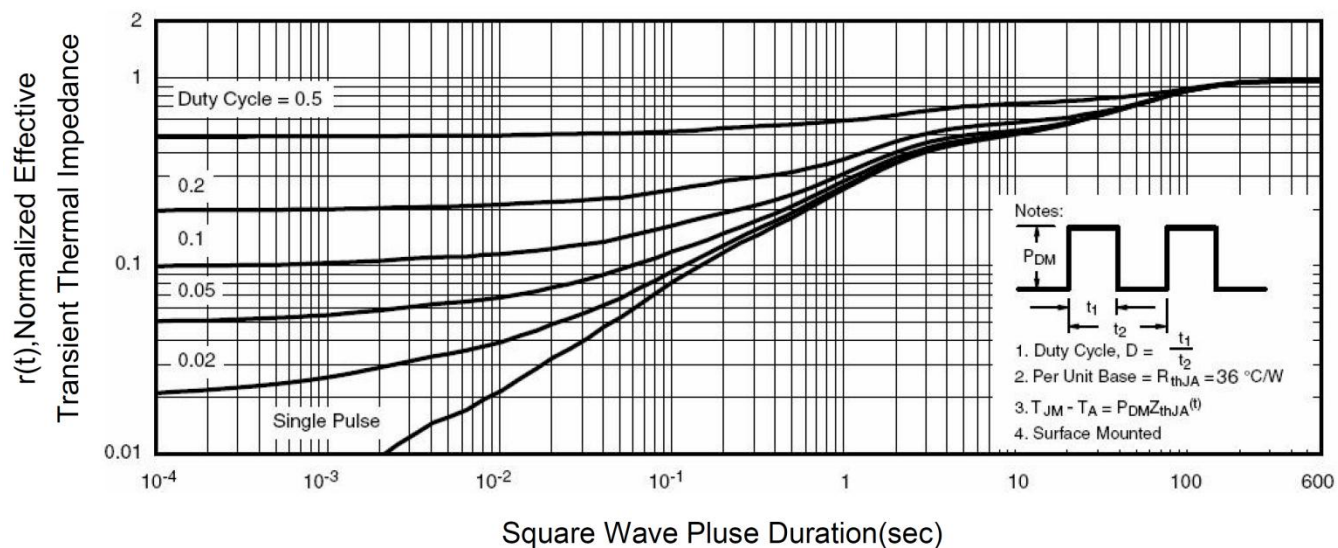
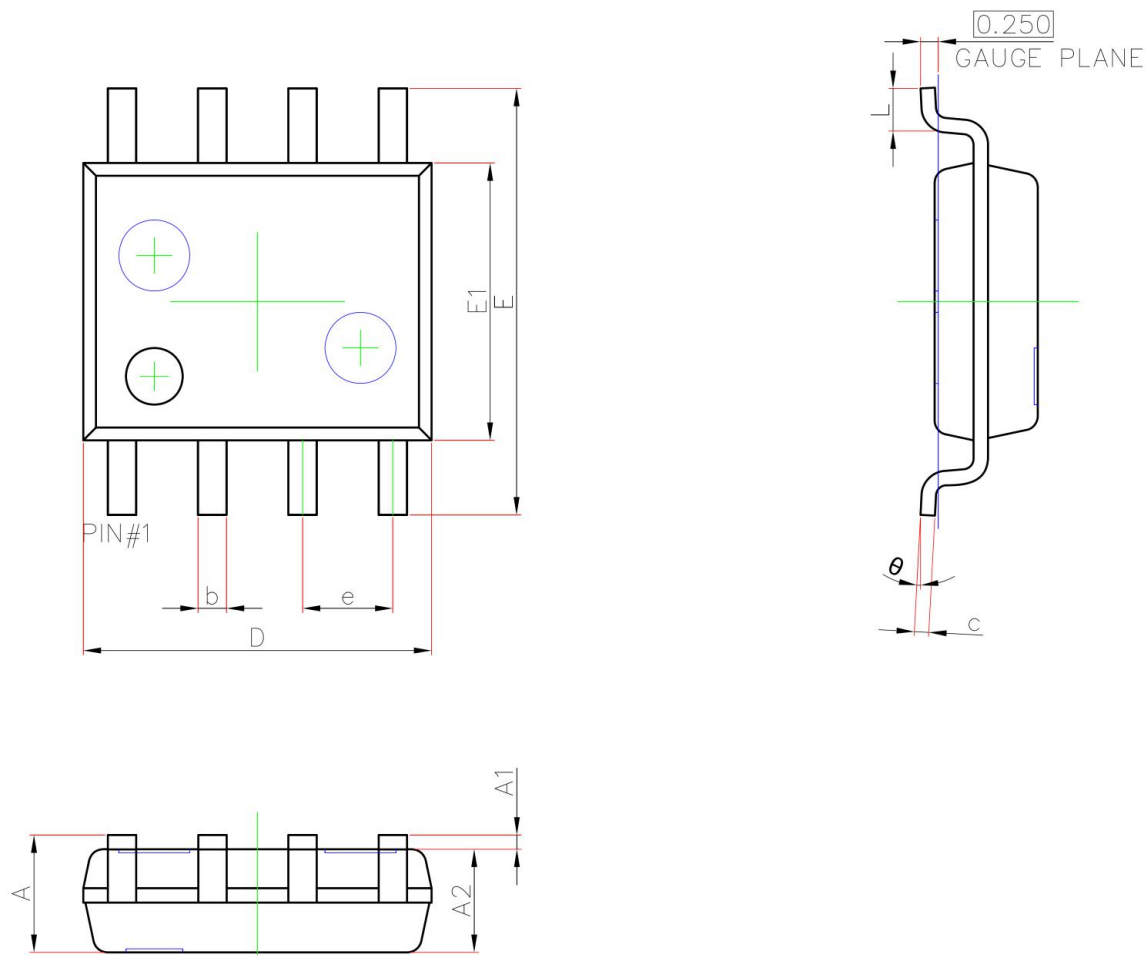


Figure 13 Normalized Maximum Transient Thermal Impedance

SOP-8 PACKAGE OUTLINE DRAWING



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.450	1.750	0.057	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	0.007	0.010
D	4.700	5.100	0.185	0.201
E	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°