30V P-Channel MOSFET

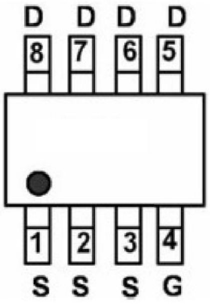
FEATURES

- $R_{DS(ON)}$≤55mΩ(43mΩ Typ.) @V_{GS}=-10V
- $R_{DS(ON)}$≤90mΩ(55mΩ Typ.) @V_{GS}=-4.5V

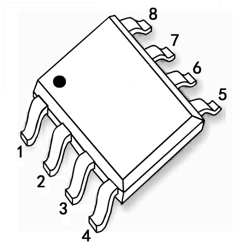
APPLICATIONS

- PWM Applications
- Load Switch
- Power Management

PIN ASSIGNMENT

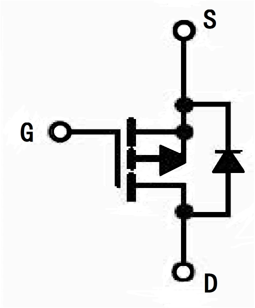


SOP-8



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

P-CHANNEL MOSFET



Absolute maximum ratings (Ta=25℃ 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	T_C = 25℃	-5.1	A
		T_C = 100℃	-3.2	A
I_{DM}	Pulsed Drain Current note1		-20	A
P_D	Power Dissipation	T_A = 25℃	2.5	W
$R_{θJA}$	Thermal Resistance, Junction to Ambient		50	℃/W
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +150	℃

Electrical characteristics (T_a=25 °C, unless otherwise noted)

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_{DS} =0V, V_{GS} = ±20V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}= V_{GS}, I_D= -250μA	-1	-1.35	-2	V
$R_{DS(on)}$	Static Drain-Source on-Resistance note2	V_{GS} =-10V, I_D =-5.1A	-	43	55	mΩ
		V_{GS} =-4.5V, I_D =-4.2A	-	55	90	
g_{FS}	Forward Transconductance	V_{DS} =-5V, I_D = -5.1A	4	-	-	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} = -15V, V_{GS} = 0V, f = 1.0MHz	-	980	-	pF
C_{oss}	Output Capacitance		-	390	-	pF
C_{rss}	Reverse Transfer Capacitance		-	135	-	pF
Q_g	Total Gate Charge	V_{DS}= -15V, I_D = -5.1A, V_{GS} = -10V	-	11	-	nC
Q_{gs}	Gate-Source Charge		-	2.0		nC
Q_{gd}	Gate-Drain("Miller") Charge		-	2.8		nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DD} = -15V, I_D = -1A, V_{GS} =-10V, R_{GEN}=6Ω	-	14	-	ns
t_r	Turn-on Rise Time		-	12	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	56	-	ns
t_f	Turn-off Fall Time		-	20	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	-5.1	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-20	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_S = -5.1A	-	-	-1.2	V

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

Typical Characteristics

Figure1: Output Characteristics

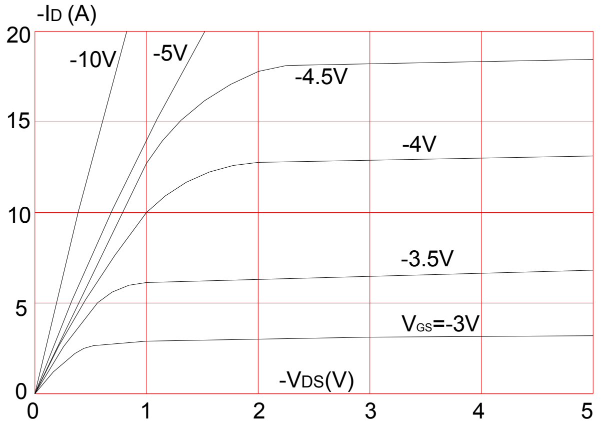


Figure 2: Typical Transfer Characteristics

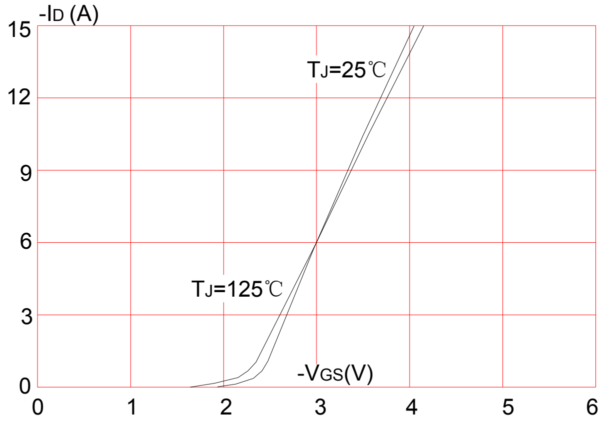


Figure 3: On-resistance vs. Drain Current

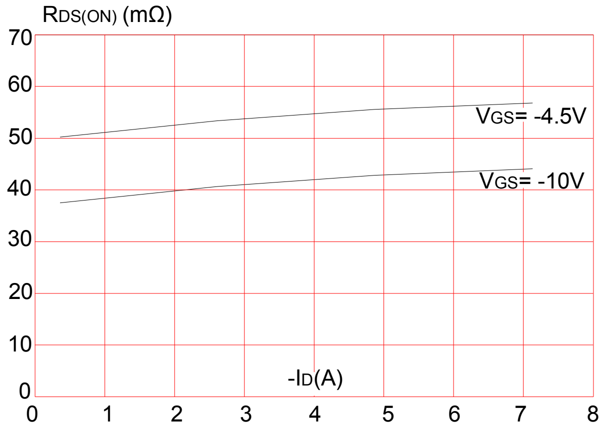


Figure 4: Body Diode Characteristics

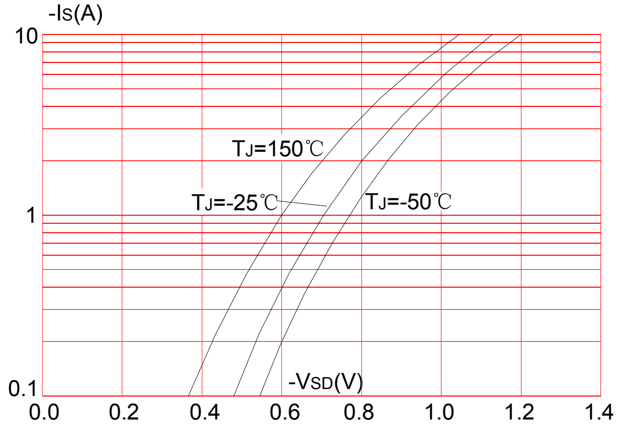


Figure 5: Gate Charge Characteristics

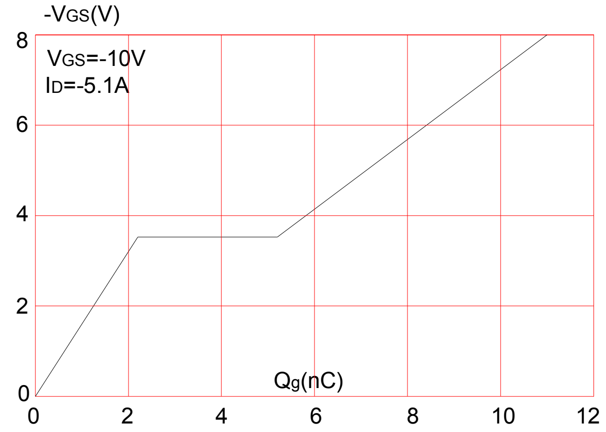
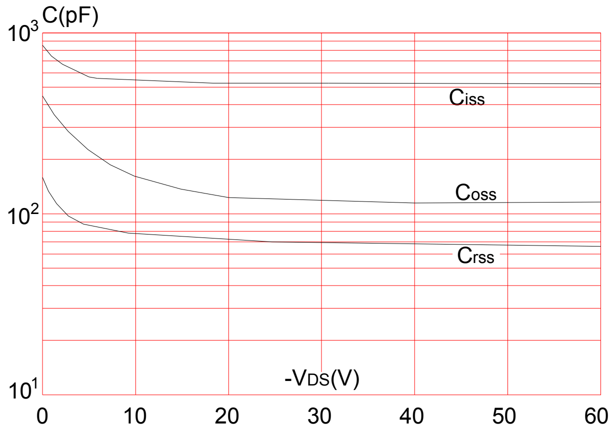


Figure 6: Capacitance Characteristics



Typical Characteristics

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

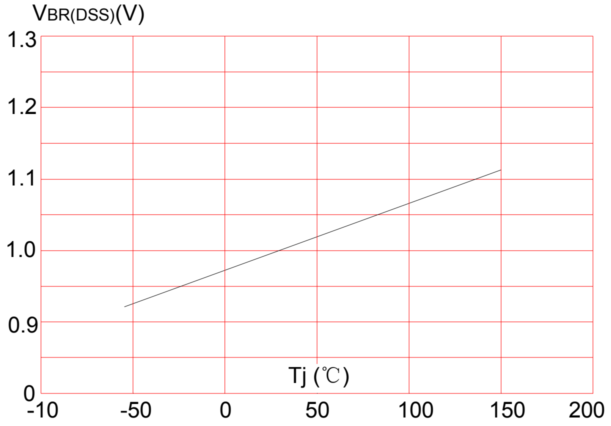


Figure 8: Normalized on Resistance vs. Junction Temperature

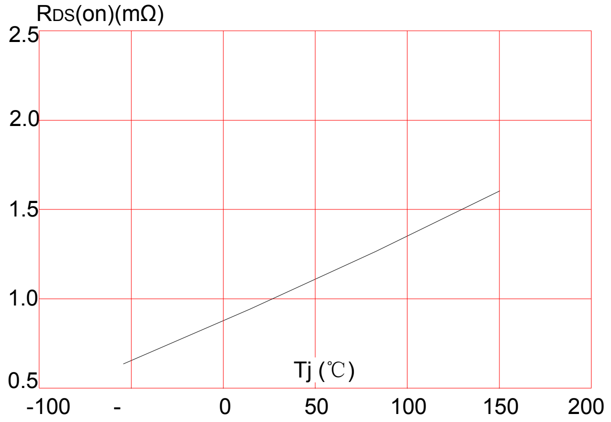


Figure 9: Maximum Safe Operating Area

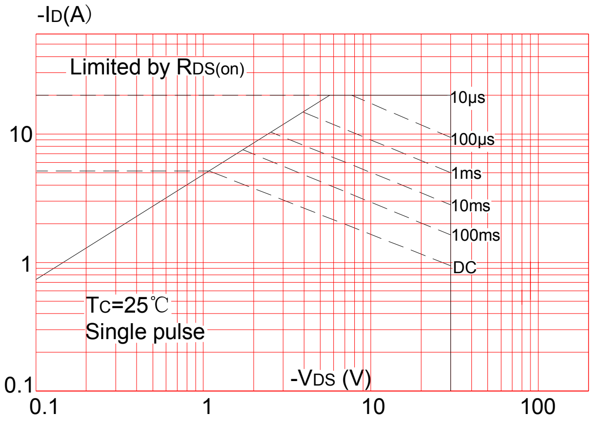


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

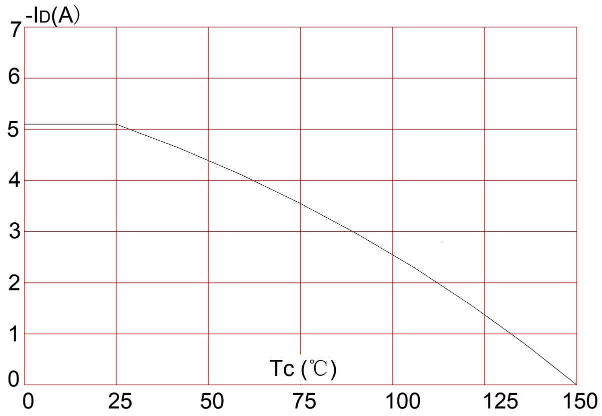
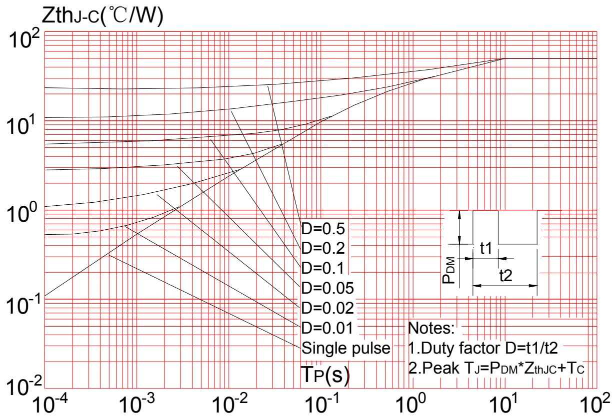
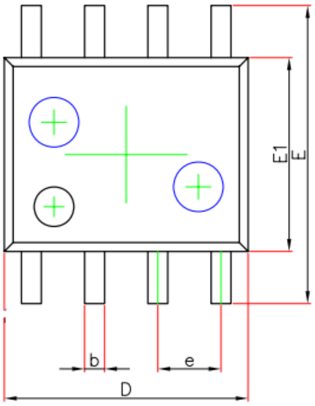
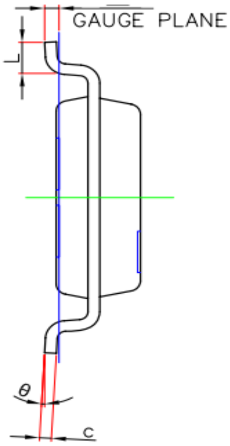


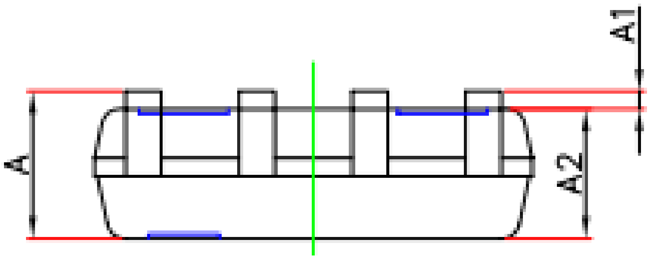
Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient (SOP-8)



SOP-8 PACKAGE OUTLINE DRAWING







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
E1	3.800	4.000	0.150	0.157
E	5.800	6.200	0.228	0.244
e	1.27(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°