

SE60P05

P-Channel Enhancement-Mode MOSFET

Revision: A

General Description

Advanced trench technology to provide excellent RDS(ON), low gate charge and low operation voltage. This device is suitable for using as a load switch or in PWM applications.

- Simple Drive Requirement
- Small Package Outline
- Surface Mount Device

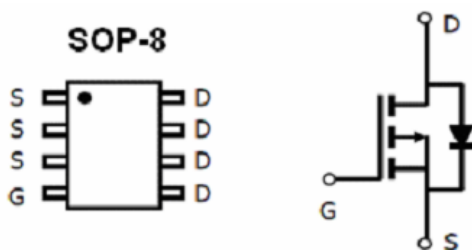
Features

For a single MOSFET

- $V_{DS} = -60V$
- $R_{DS(ON)} = 64m\Omega @ V_{GS} = -10V$

Pin configurations

See Diagram below



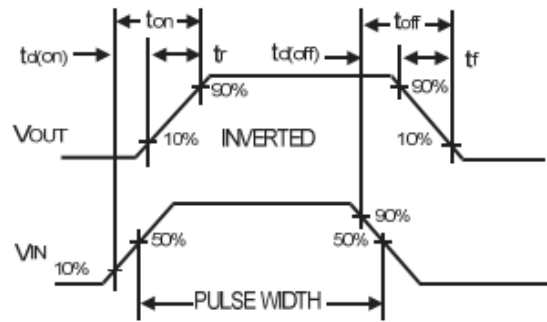
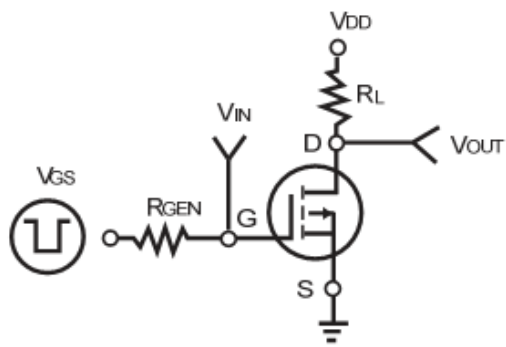
Absolute Maximum Ratings

Parameter		Symbol	Rating	Units
Drain-Source Voltage		V_{DS}	-60	V
Gate-Source Voltage		V_{GS}	± 20	V
Drain Current	Continuous	I_D	-6	A
	Pulsed		-30	
Total Power Dissipation	@TA=25°C	P_D	3	W
Operating Junction Temperature Range		T_J	-55 to 150	°C

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Electrical Characteristics (T _J =25°C unless otherwise noted)						
Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
OFF CHARACTERISTICS (Note 2)						
BV _{DSS}	Drain-Source Breakdown Voltage	I _D =-250μA, V _{GS} =0 V	-60			V
I _{DSS}	Drain to Source Leakage Current	V _{DS} = -60V, V _{GS} =0V			-1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} = 20V			100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D =-250μA	-1		-3	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =-10V, I _D =-4A	-	64	80	mΩ
g _{FS}	Forward Transconductance	V _{DS} = -15V, I _D =-5A	18			S
DYNAMIC PARAMETERS						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-30V, f=1MHz		960		pF
C _{oss}	Output Capacitance			86		pF
C _{rss}	Reverse Transfer Capacitance			38		pF
SWITCHING PARAMETERS						
Q _g	Total Gate Charge ²	V _{GS} =-10V, V _{DS} =-30V, I _D =-3.1A		15.8		nC
Q _{gs}	Gate Source Charge			3		nC
Q _{gd}	Gate Drain Charge			3.5		nC
t _{d(on)}	Turn-On Delay Time	V _{GS} =-10V, V _{DS} =-30V, R _{GEN} =3Ω, R _L =2.5Ω		9		ns
t _{d(off)}	Turn-Off Delay Time			25		ns
t _{d(r)}	Turn-On Rise Time			10		ns
t _{d(f)}	Turn-Off Fall Time			11		ns
Thermal Resistance						
Symbol	Parameter		Typ	Max	Units	
R _{θJA}	Junction to Ambient (t ≤ 10s)		-	50	°C/W	

Test Circuits and Waveform



Typical Characteristics

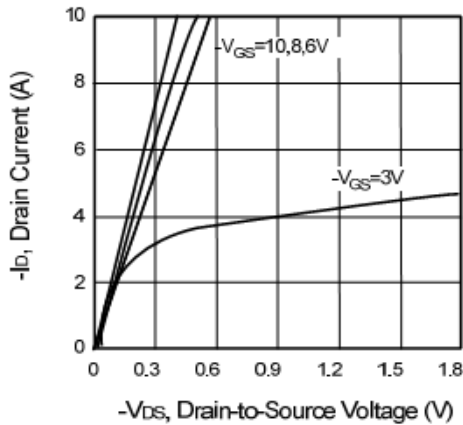


Figure 1. Output Characteristics

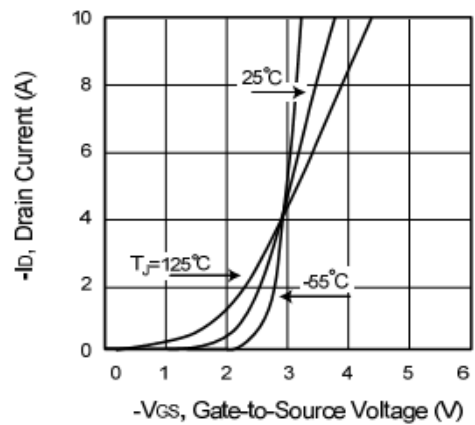


Figure 2. Transfer Characteristics

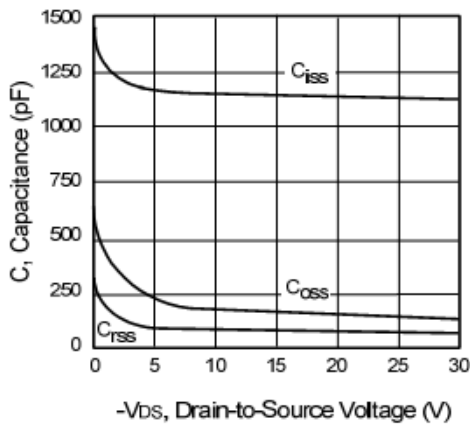


Figure 3. Capacitance

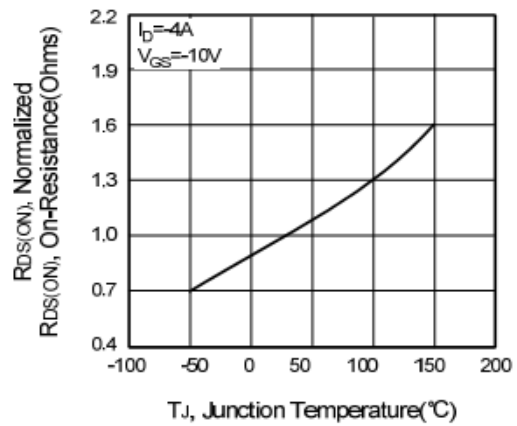


Figure 4. On-Resistance Variation with Temperature

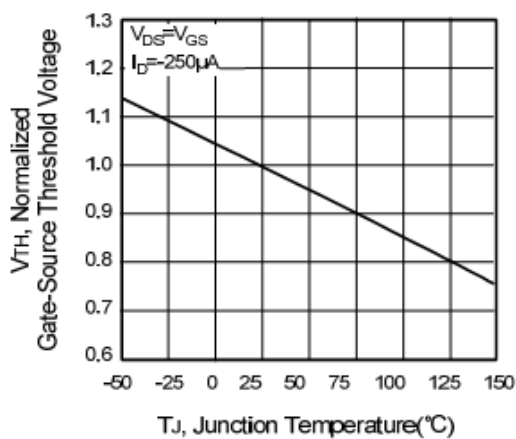


Figure 5. Gate Threshold Variation with Temperature

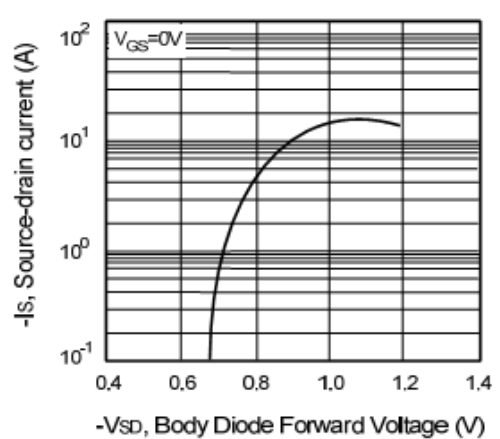


Figure 6. Body Diode Forward Voltage Variation with Source Current

Typical Characteristics

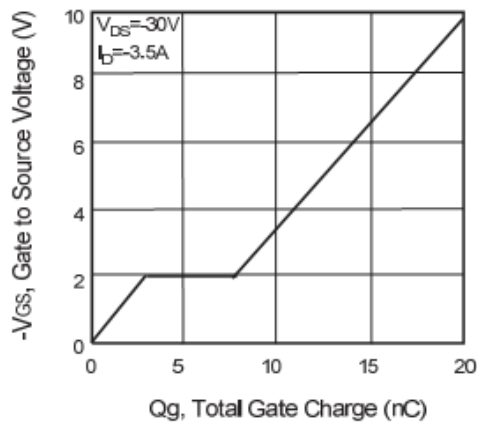


Figure 7. Gate Charge

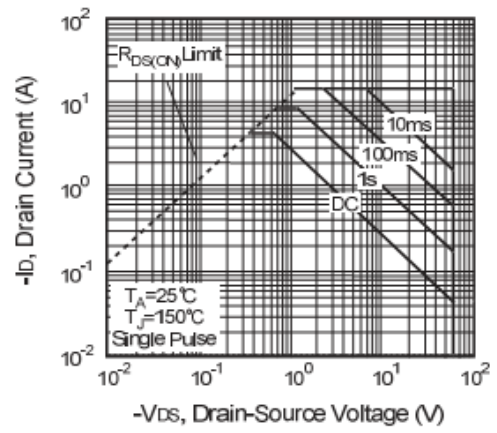
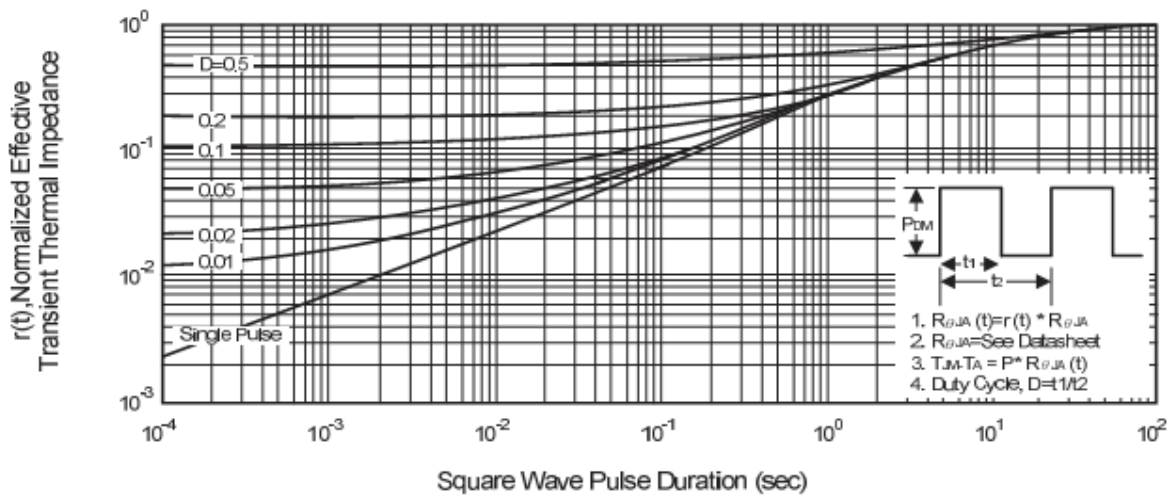


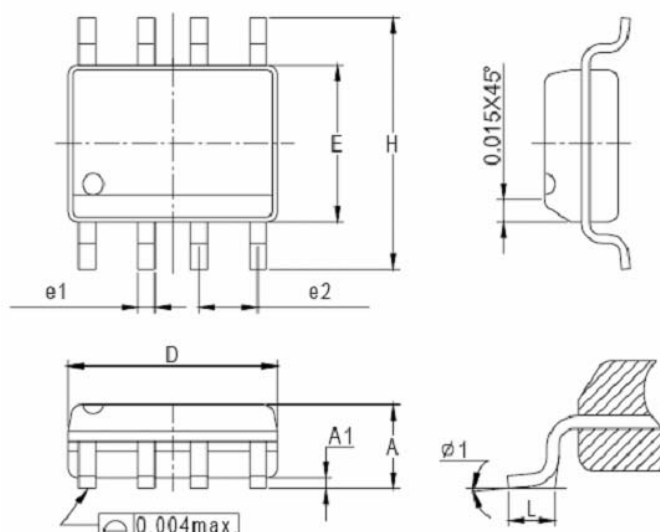
Figure 8. Maximum Safe Operating Area



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Package Outline Dimension

SOP-8



Dim	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	1.35	1.75	0.053	0.069
A1	0.10	0.25	0.004	0.010
D	4.80	5.00	0.189	0.197
E	3.80	4.00	0.150	0.157
H	5.80	6.20	0.228	0.244
L	0.40	1.27	0.016	0.050
e1	0.33	0.51	0.013	0.020
e2	1.27BSC		0.50BSC	
φ 1	8°		8°	

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