

SE30P09D

Dual P-Channel Enhancement-Mode MOSFET

Revision: A

General Description

Advanced trench technology to provide excellent $R_{DS(ON)}$, 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

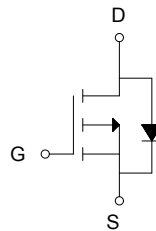
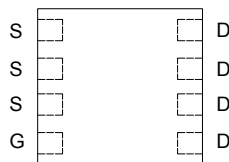
Features

For a single MOSFET

- $V_{DS} = -30V$
- $R_{DS(ON)} = 12m\Omega @ V_{GS}=-10V$
- $R_{DS(ON)} = 29m\Omega @ V_{GS}=-4.5V$

Pin configurations

See Diagram below



Absolute Maximum Ratings

Parameter		Symbol	Rating	Units
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	± 25	V
Drain Current	Continuous	I_D	-9	A
	Pulsed		-50	
Avalanche Current		I_{AR}	33	A
Repetitive Avalanche Energy L=0.1mH		E_{AR}	54	mJ
Total Power Dissipation	@TA=25°C	P_D	2	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	-30			V
I _{DSS}	Drain to Source Leakage Current	V _{DS} = -30V, V _{GS} =0V			-1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} = 25V			100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D =-250μA	-1.7	-2.3	-2.8	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =-10V, I _D =-8A	-	12	18	mΩ
		V _{GS} =-4.5V, I _D =-5A		29		mΩ
DYNAMIC PARAMETERS						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-15V, f=1MHz		2060	2600	pF
C _{oss}	Output Capacitance			370		pF
C _{rss}	Reverse Transfer Capacitance			295		pF
SWITCHING PARAMETERS						
Q _g	Total Gate Charge ²	V _{GS} =-10V, V _{DS} =-15V, I _D =-9A		30	39	nC
Q _{gs}	Gate Source Charge			4.6		nC
Q _{gd}	Gate Drain Charge			10		nC
t _{d(on)}	Turn-On Delay Time	V _{GS} =-10V, V _{DS} =-15V, R _{GEN} =3Ω, R _L =1Ω		11		ns
t _{d(off)}	Turn-Off Delay Time			24		ns
t _{d(r)}	Turn-On Rise Time			9.4		ns
t _{d(f)}	Turn-Off Fall Time			12		ns
Thermal Resistance						
Symbol	Parameter		Typ	Max	Units	
R _{θJA}	Junction to Ambient (t ≤ 10s)		48	62.5	°C/W	

Typical Characteristics

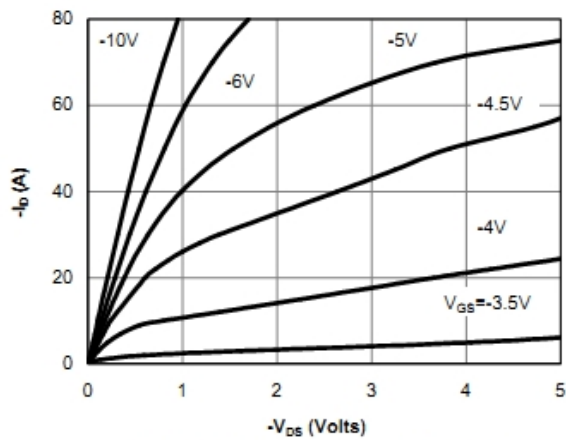


Fig 1: On-Region Characteristics (Note E)

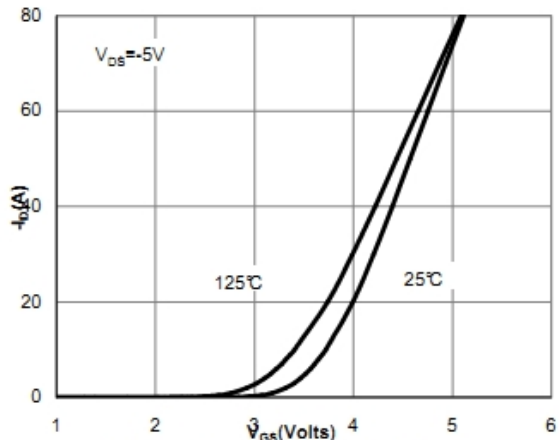


Figure 2: Transfer Characteristics (Note E)

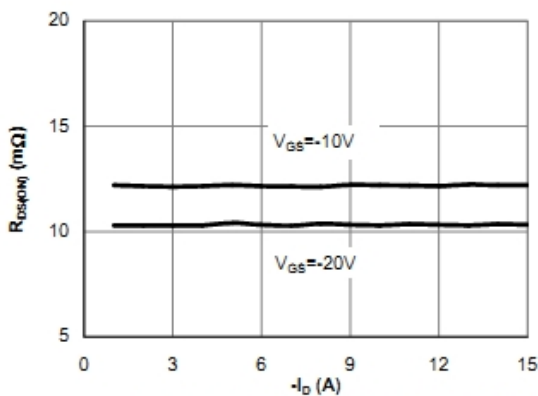


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

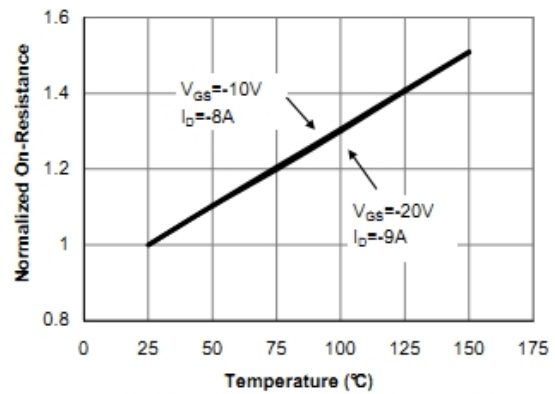


Figure 4: On-Resistance vs. Junction Temperature (Note E)

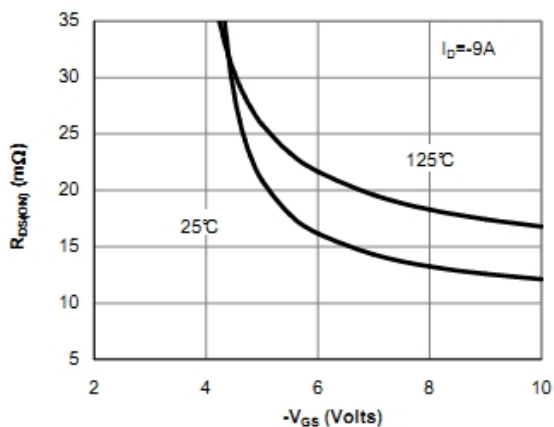


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

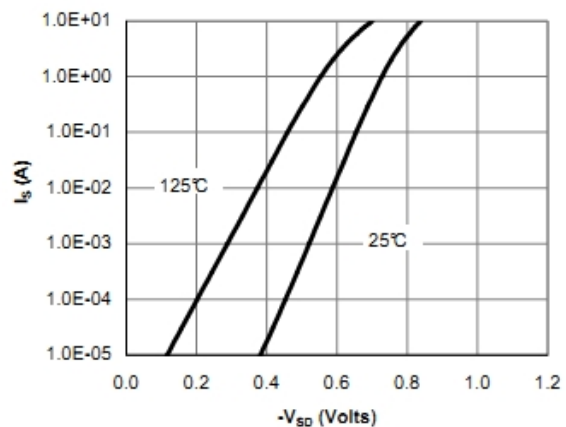


Figure 6: Body-Diode Characteristics (Note E)

Typical Characteristics

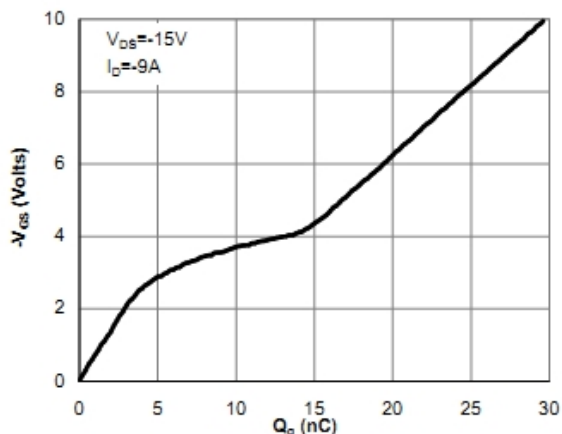


Figure 7: Gate-Charge Characteristics

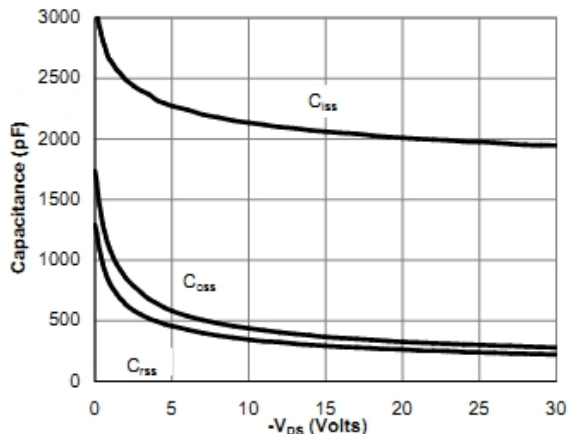


Figure 8: Capacitance Characteristics

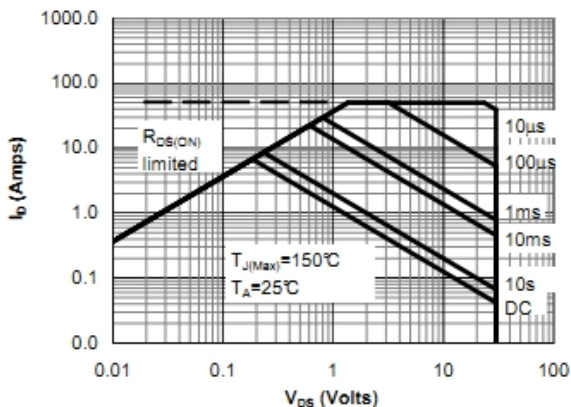


Figure 10: Maximum Forward Biased Safe Operating Area (Note F)

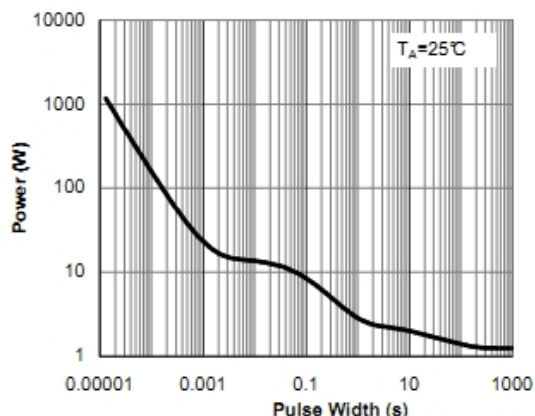


Figure 11: Single Pulse Power Rating Junction-to-Ambient (Note F)

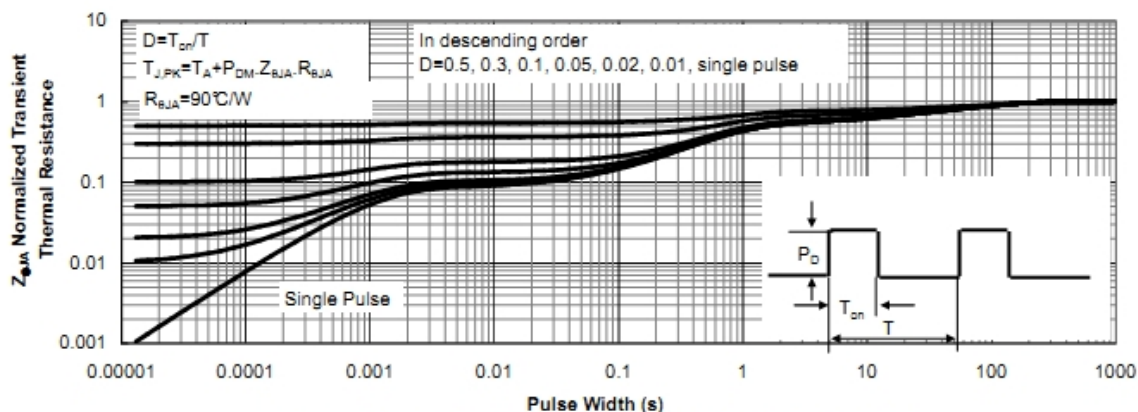
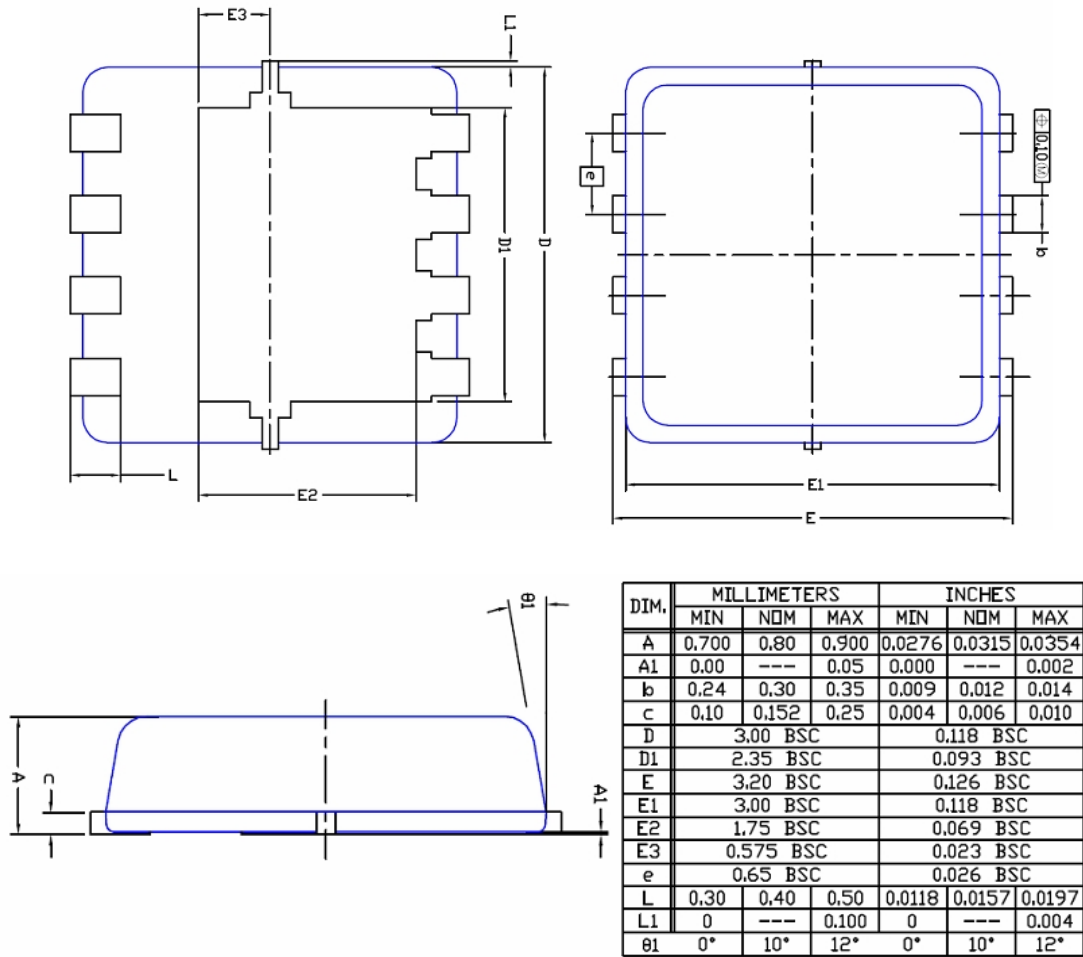


Figure 12: Normalized Maximum Transient Thermal Impedance (Note F)

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Package Outline Dimension

DFN3X3



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