

SE30P12D

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

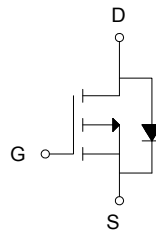
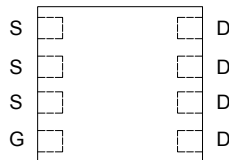
Features

For a single MOSFET

- $V_{DS} = -30V$
- $R_{DS(ON)} = 11.5m\Omega @ V_{GS}=-10V$
- $R_{DS(ON)} = 18m\Omega @ V_{GS}=-4.5V$

Pin configurations

See Diagram below



Absolute Maximum Ratings

Parameter		Symbol	Rating	Units
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	± 20	V
Drain Current	Continuous	I_D	-12	A
	Pulsed		-50	
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	-33		V
I _{DSS}	Drain to Source Leakage Current	V _{DS} = -24V, V _{GS} =0V			-5	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	-1.5	-3	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =-10V, I _D =-10A	-	11.5	15	mΩ
		V _{GS} =-4.5V, I _D =-7A		18	25	mΩ
DYNAMIC PARAMETERS						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-15V, f=1MHz		5270		pF
C _{oss}	Output Capacitance			945		pF
C _{rss}	Reverse Transfer Capacitance			745		pF
SWITCHING PARAMETERS						
Q _g	Total Gate Charge ²	V _{GS} =-10V, V _{DS} =-15V, I _D =-15A		100		nC
Q _{gs}	Gate Source Charge			14.5		nC
Q _{gd}	Gate Drain Charge			23		nC
t _{d(on)}	Turn-On Delay Time	V _{GS} =-10V, V _{DS} =-15V, R _{GEN} =3Ω, R _L =1Ω		14		ns
t _{d(off)}	Turn-Off Delay Time			76.5		ns
t _{d(r)}	Turn-On Rise Time			16.5		ns
t _{d(f)}	Turn-Off Fall Time			37.5		ns
Thermal Resistance						
Symbol	Parameter		Typ	Max	Units	
R _{θJA}	Junction to Ambient (t ≤ 10s)		26	40	°C/W	

Typical Characteristics

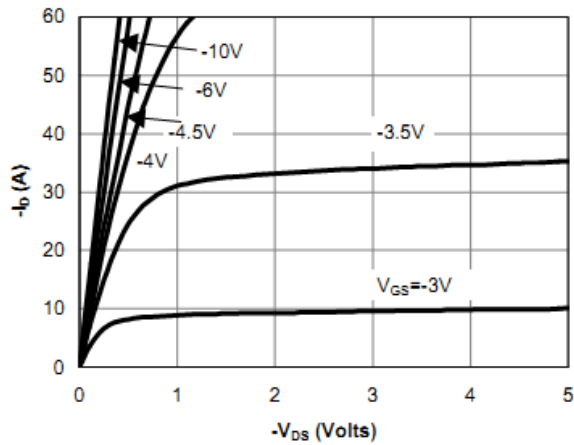


Fig 1: On-Region Characteristics

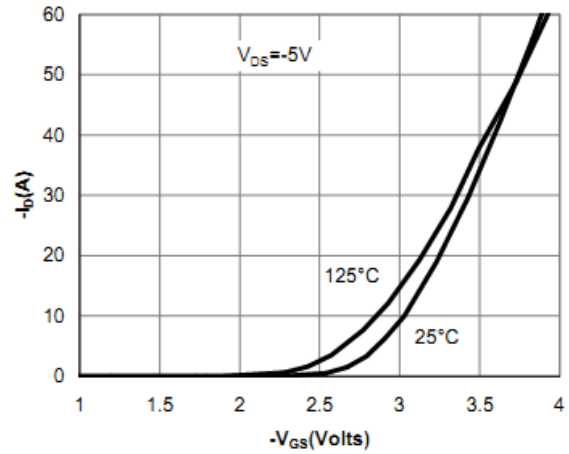


Figure 2: Transfer Characteristics

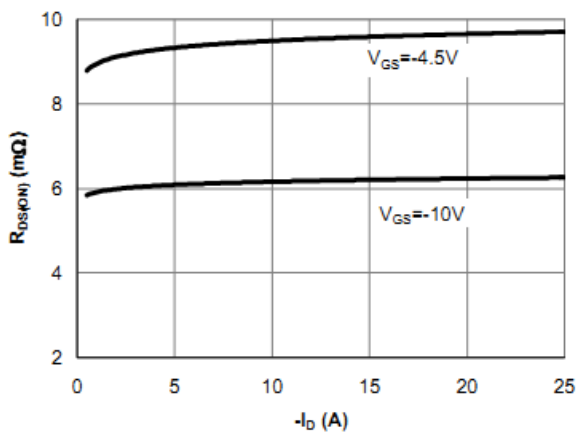


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

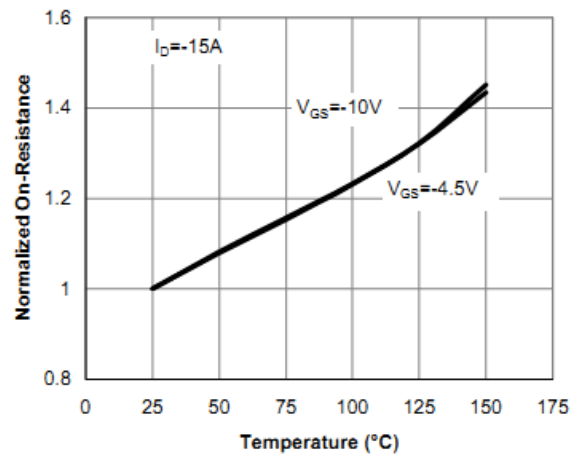


Figure 4: On-Resistance vs. Junction Temperature

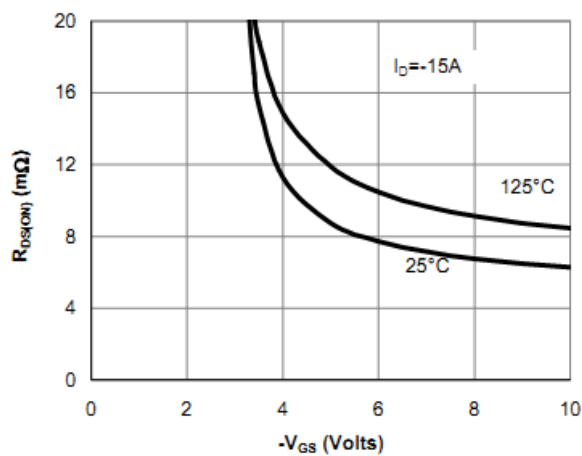


Figure 5: On-Resistance vs. Gate-Source Voltage

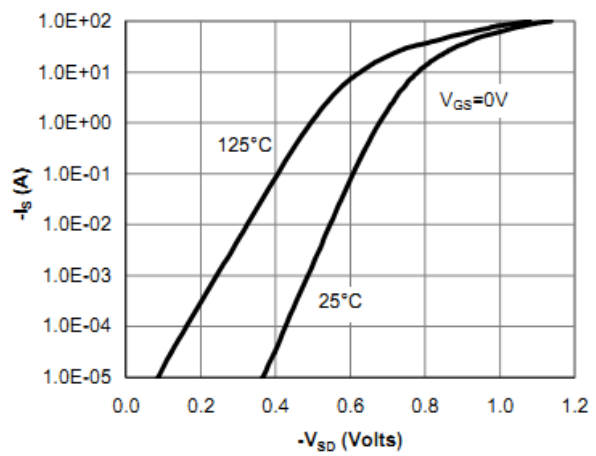


Figure 6: Body-Diode Characteristics

Typical Characteristics

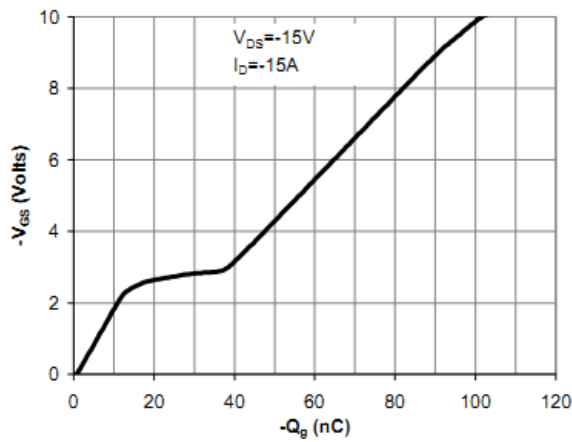


Figure 7: Gate-Charge Characteristics

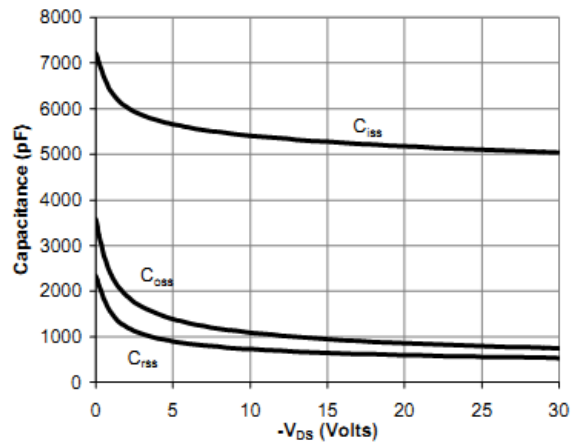


Figure 8: Capacitance Characteristics

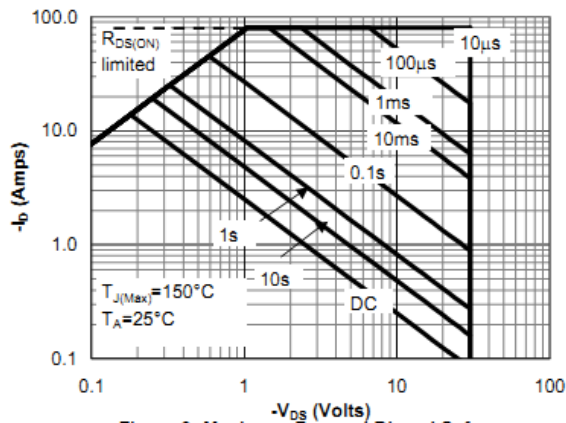


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

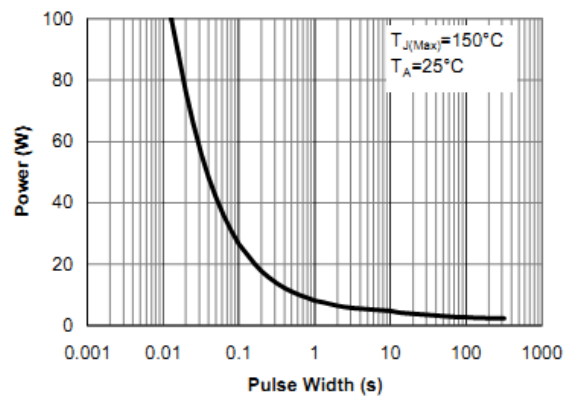


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

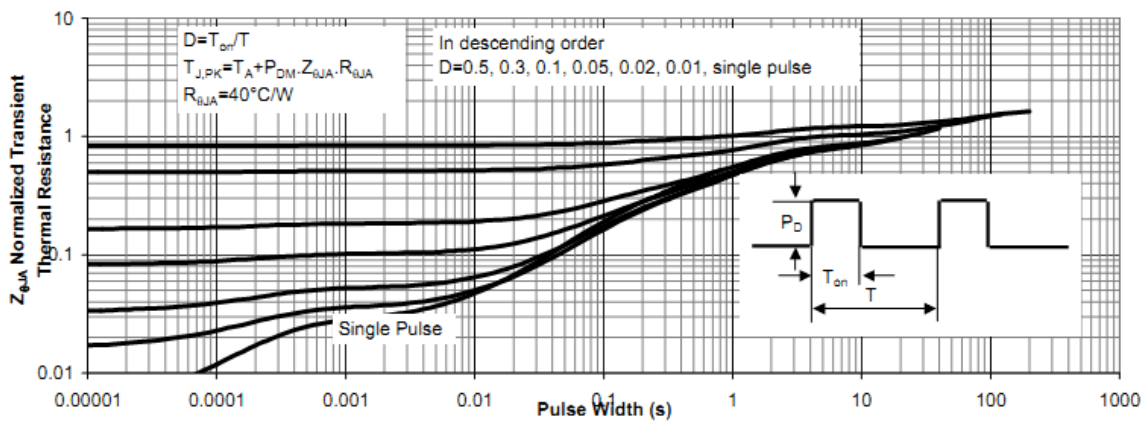
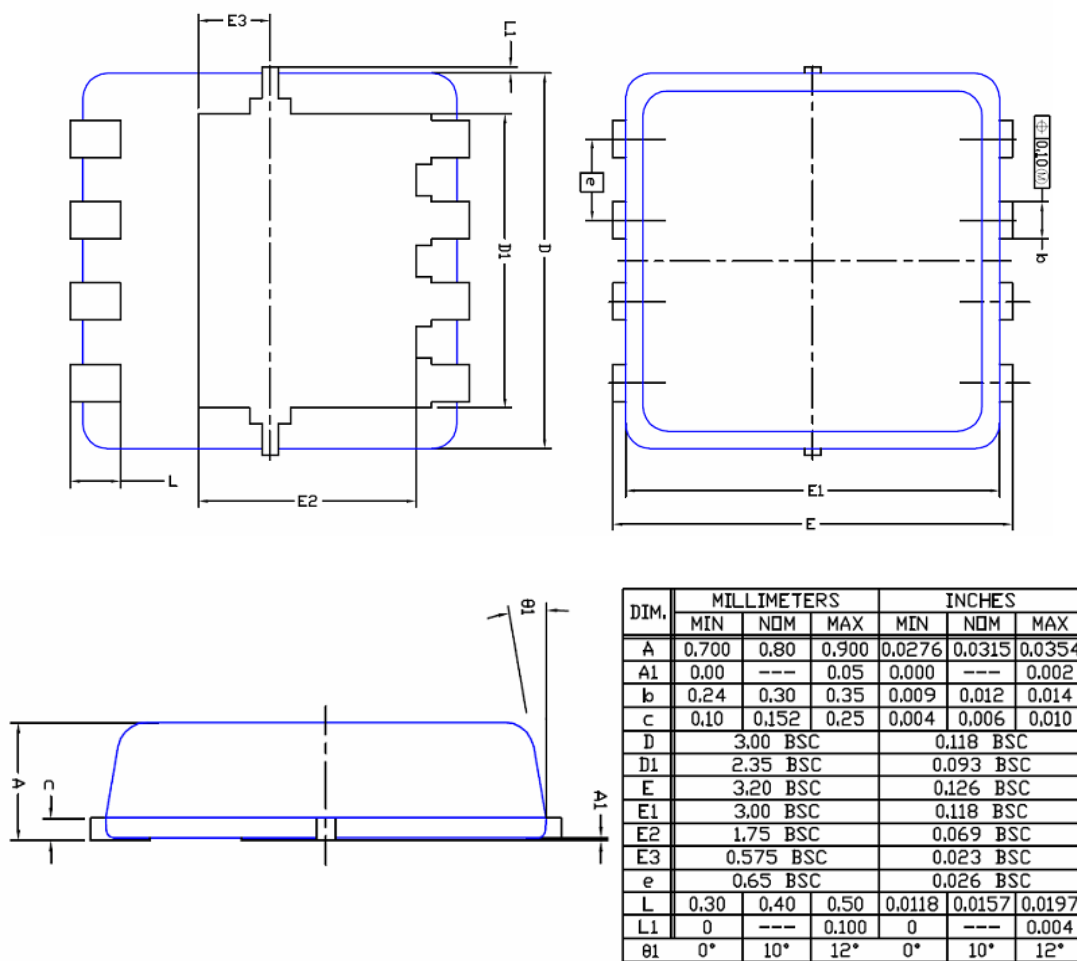


Figure 11: Normalized Maximum Transient Thermal Impedance

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Package Outline Dimension

DFN3X3



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