

SE30150

N-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

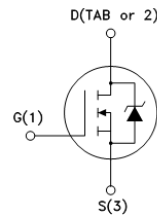
- $V_{DS} = 30V$
- $R_{DS(ON)} = 2.3m\Omega @ V_{GS}=10V$

Pin configurations

See Diagram below



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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	90	A
	Pulsed		200	
Total Power Dissipation	@TA=25°C	P_D	42	W
Avalanche Current		I_{AS}	45	A
Avalanche energy L=0.1mH		E_{AS}	121	mJ
Operating Junction Temperature Range		T_J	-55 to 150	°C

Thermal Resistance

Symbol	Parameter	Typ	Max	Units
$R_{\theta JC}$	Thermal Resistance Junction to Case		2.97	°C/W

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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)						
B _V 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			10	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		2.3	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =10V, I _D =22.5A	-	2.3	2.7	mΩ
DYNAMIC PARAMETERS						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =15V, f=1MHz		1600	2100	pF
C _{oss}	Output Capacitance			53	120	pF
C _{rss}	Reverse Transfer Capacitance			890		pF
SWITCHING PARAMETERS						
Q _g	Total Gate Charge	V _{GS} =10V, V _{DS} =15V, I _D =45A		21		nC
Q _{gs}	Gate Source Charge			5.6		nC
Q _{gd}	Gate Drain Charge			2.3		nC
t _{d(on)}	Turn-On Delay Time	V _{GS} =10V, V _{DS} =20V, R _{GEN} =4.7Ω		4.4		ns
t _{d(off)}	Turn-Off Delay Time			5.7		ns
t _{d(r)}	Turn-On Rise Time			11.5		ns
t _{d(f)}	Turn-Off Fall Time			24		ns
Source-Drain Diode Characteristics						
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =45A			1.2	V
I _S	Diode Forward Current				90	A

Typical Characteristics

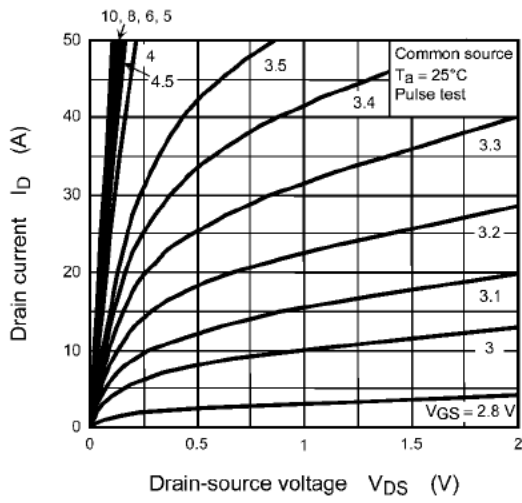


Fig. 8.1 $I_D - V_{DS}$

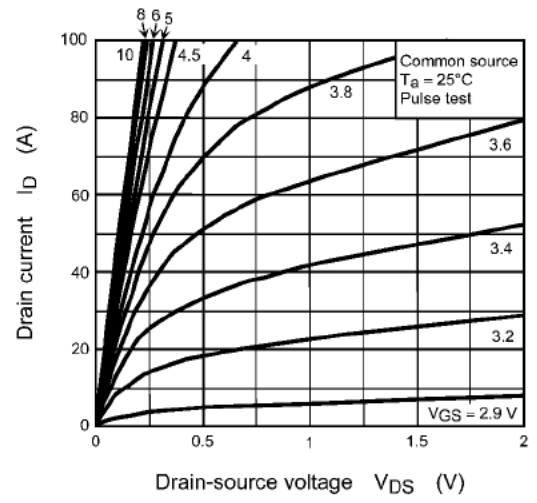


Fig. 8.2 $I_D - V_{DS}$

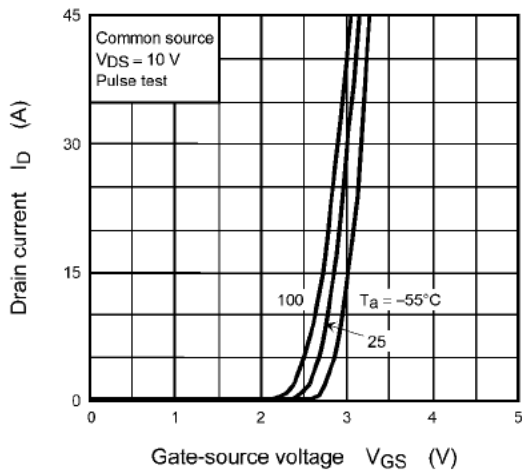


Fig. 8.3 $I_D - V_{GS}$

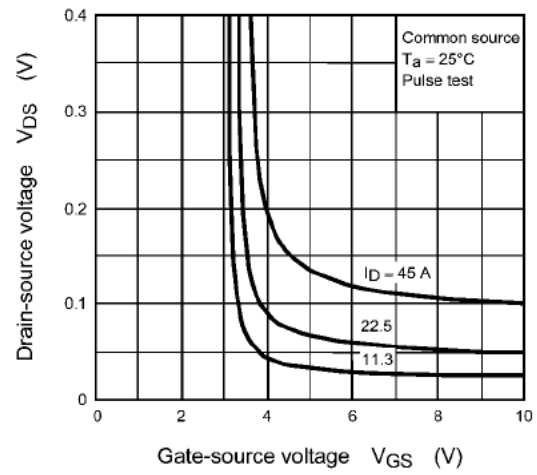


Fig. 8.4 $V_{DS} - V_{GS}$

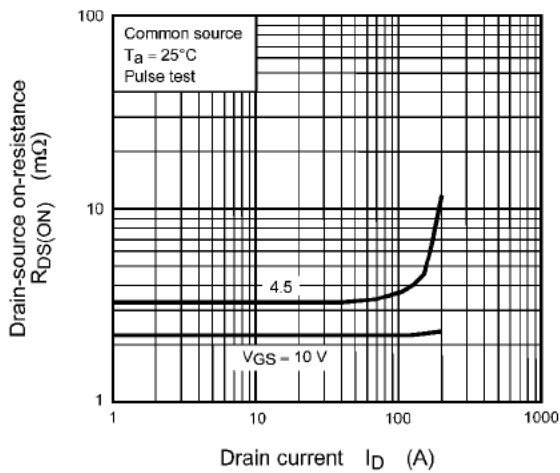


Fig. 8.5 $R_{DS(ON)} - I_D$

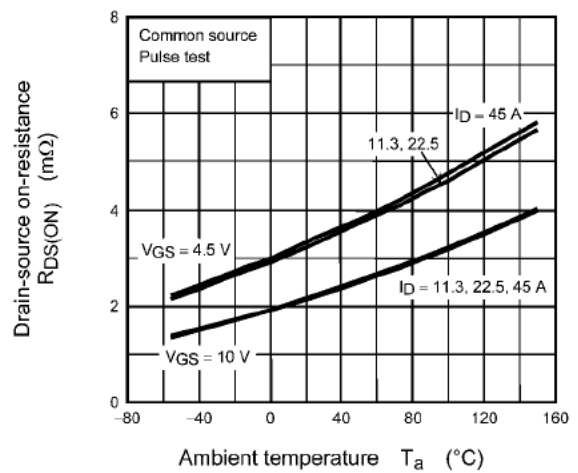


Fig. 8.6 $R_{DS(ON)} - T_a$

Typical Characteristics

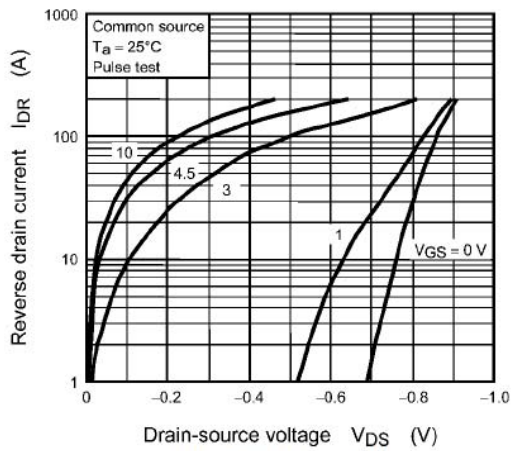


Fig. 8.7 $I_{DR} - V_{DS}$

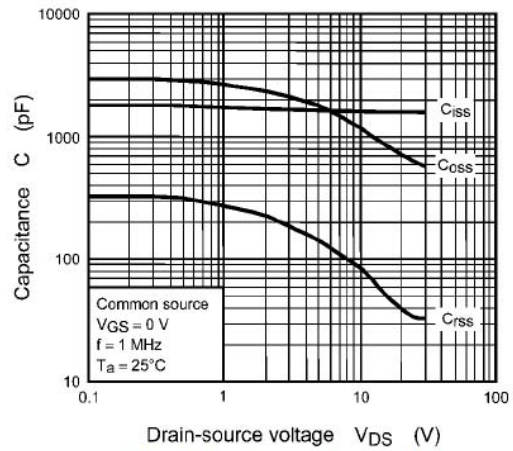


Fig. 8.8 Capacitance - V_{DS}

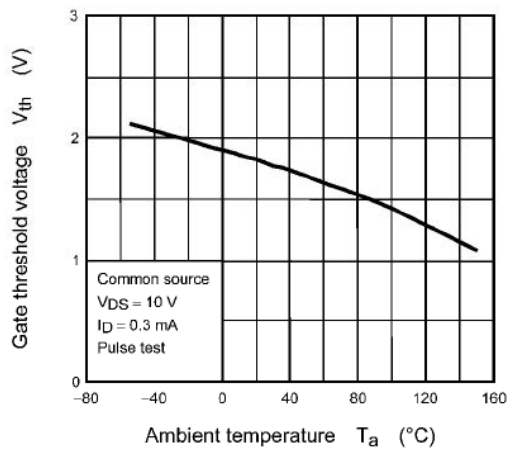


Fig. 8.9 $V_{th} - T_a$

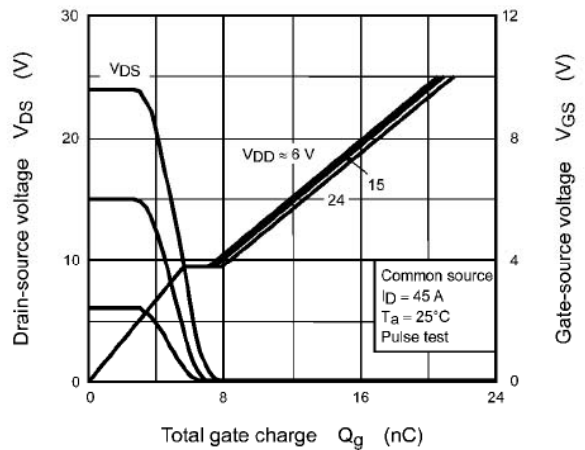


Fig. 8.10 Dynamic Input/Output Characteristics

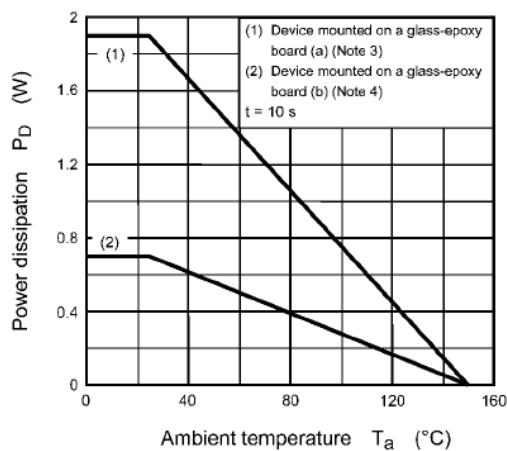


Fig. 8.11 $P_D - T_a$
 (Guaranteed Maximum)

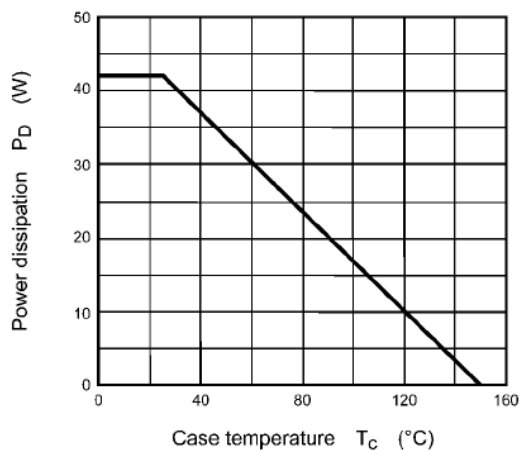
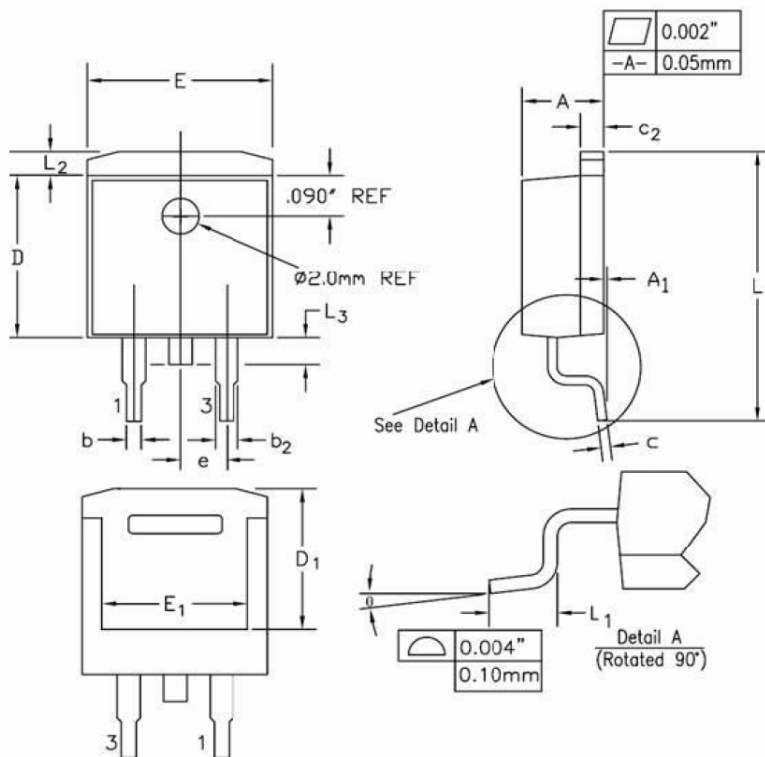


Fig. 8.12 $P_D - T_c$
 (Guaranteed Maximum)

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Package Outline Dimension

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SYMBOL	INCHES		MILLIMETERS		NOTES
	MIN	MAX	MIN	MAX	
A	0.170	0.180	4.32	4.57	
A1	-	0.010	-	0.25	
b	0.028	0.037	0.71	0.94	
b2	0.045	0.055	1.15	1.40	
c	0.018	0.024	0.46	0.61	
c2	0.048	0.055	1.22	1.40	
D	0.350	0.370	8.89	9.40	
D1	0.315	0.324	8.01	8.23	
E	0.395	0.405	10.04	10.28	
E1	0.310	0.318	7.88	8.08	
e	0.100 BSC.		2.54 BSC.		
L	0.580	0.620	14.73	15.75	
L1	0.090	0.110	2.29	2.79	
L2	0.045	0.055	1.15	1.39	
L3	0.050	0.070	1.27	1.77	
θ	0°	8°	0°	8°	

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