

SE3060D

N-Channel Enhancement-Mode MOSFET

Revision: A

General Description

This type used advanced trench technology and design to provide excellent RDS(ON) with low gate charge. It can be used in a wide variety of application

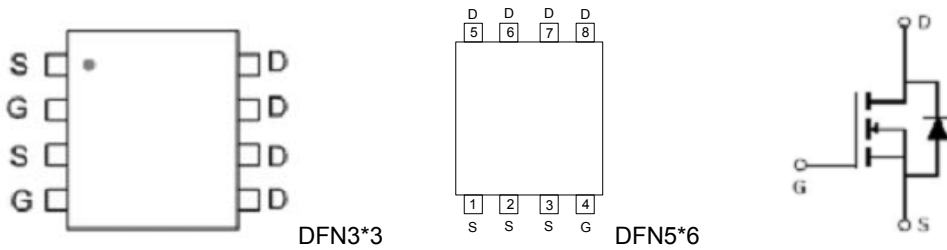
Features

For a single MOSFET

- $V_{DS} = 30V$
- $R_{DS(ON)} = 5.5m\Omega @ V_{GS}=10V$
- $R_{DS(ON)} = 6m\Omega @ V_{GS}=5V$

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	I_D	Continuous	60
		Pulsed	180
Total Power Dissipation	P_D	53	W
Derating factor		0.56	W/°C
Single pulse avalanche energy	E_{AS}	306	mJ
Operating Junction Temperature Range	T_J	-55 to 175	°C

Thermal Resistance

Symbol	Parameter	Typ	Max	Units
$R_{\theta JC}$	Thermal Resistance Junction to Case	-	1.8	°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)						
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} =20V			100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D =250μA	1	1.6	3	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =10V, I _D =25A	-	5.5	6.8	mΩ
		V _{GS} =5V, I _D =20A	-	6	9	mΩ
g _{FS}	Forward Transconductance	V _{DS} =5V, I _D =24A	20			S
DYNAMIC PARAMETERS						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =15V, f=1MHz		1595		pF
C _{oss}	Output Capacitance			185		pF
C _{rss}	Reverse Transfer Capacitance			160		pF
SWITCHING PARAMETERS						
Q _g	Total Gate Charge ²	V _{GS} =10V, V _{DS} =15V, I _D =15A		36		nC
Q _{gs}	Gate Source Charge			6.2		nC
Q _{gd}	Gate Drain Charge			7.5		nC
t _{d(on)}	Turn-On Delay Time	V _{GS} =10V, V _{DS} =15V, R _{GEN} =3.5Ω I _D =10A		8		ns
t _{d(off)}	Turn-Off Delay Time			29		ns
t _{d(r)}	Turn-On Rise Time			10.5		ns
t _{d(f)}	Turn-Off Fall Time			9.5		ns
Source-Drain Diode Characteristics						
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =24A			1.2	V
I _S	Diode Forward Current				80	A
t _{rr}	Reverse Recovery Time	T _J =25°C, I _F =80A Di/dt=100A/μs		32	50	nS
Q _{rr}	Reverse Recovery Charge			12	20	nC
t _{on}	Forward Turn-On Time	Intrinsic turn-on time is negligible(turn-on is dominated by LS)				

Typical Characteristics

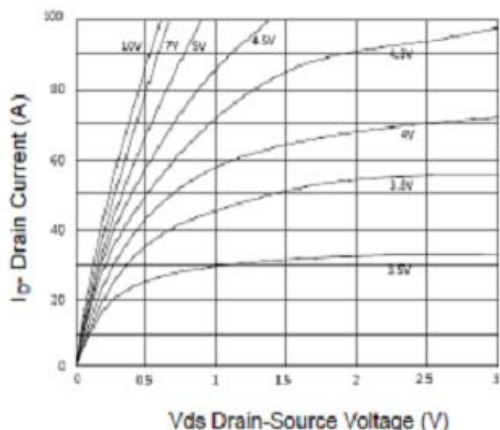


Figure 1 Output Characteristics

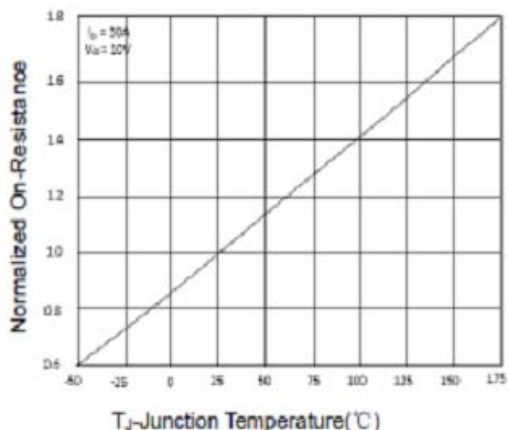


Figure 4 Rds(on)-Junction Temperature

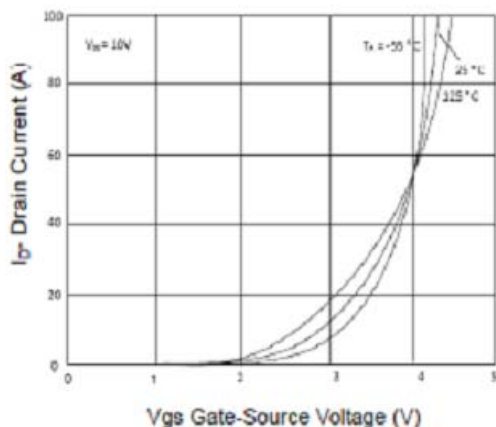


Figure 2 Transfer Characteristics

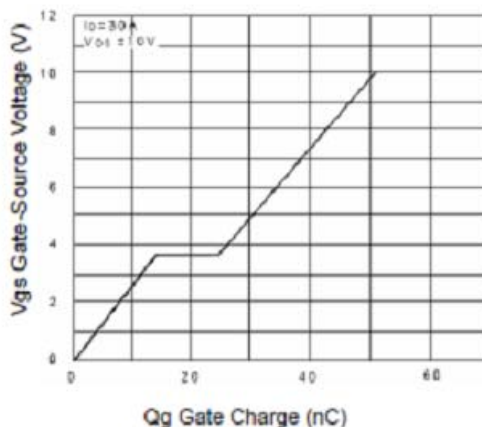


Figure 5 Gate Charge

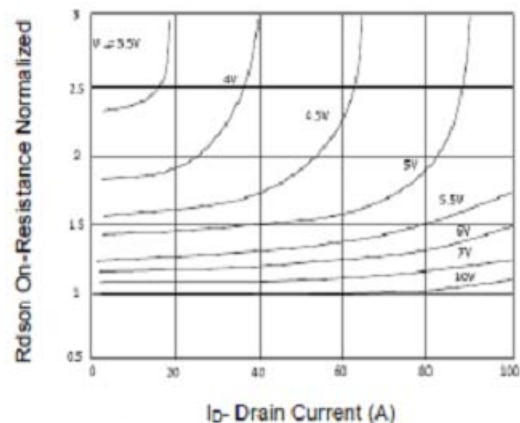


Figure 3 Rds(on)-Drain Current

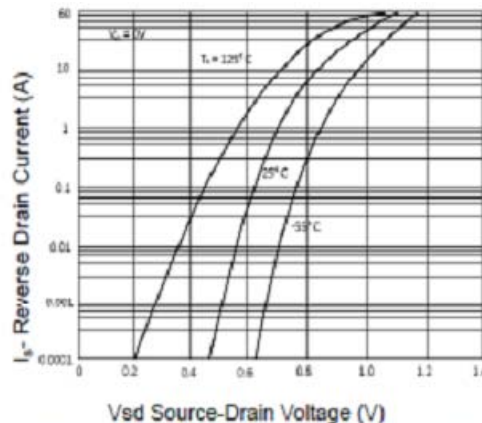


Figure 6 Source-Drain Diode Forward

Typical Characteristics

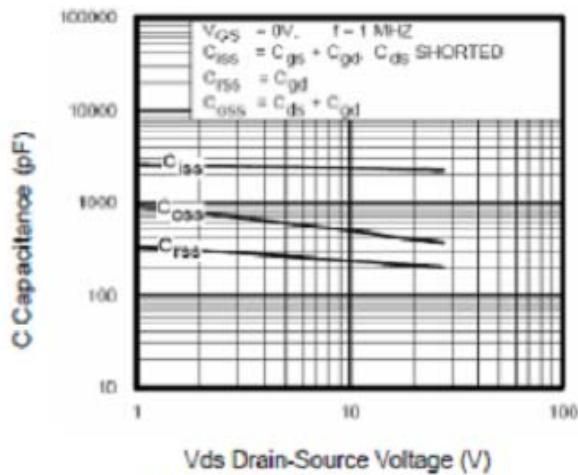


Figure 7 Capacitance vs Vds

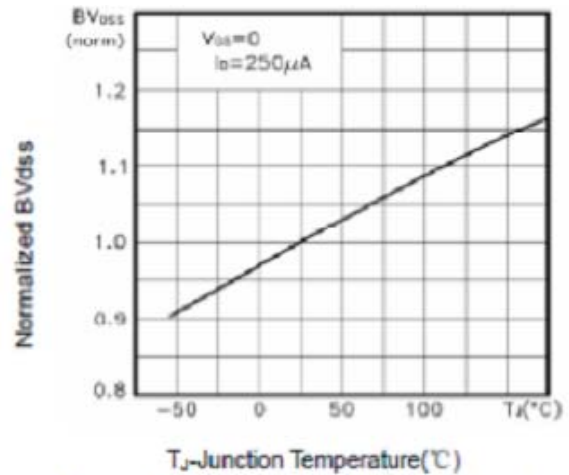


Figure 9 BV_{oss} vs Junction Temperature

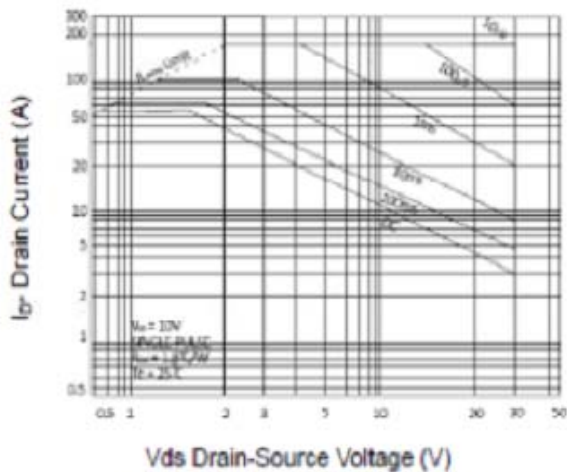


Figure 8 Safe Operation Area

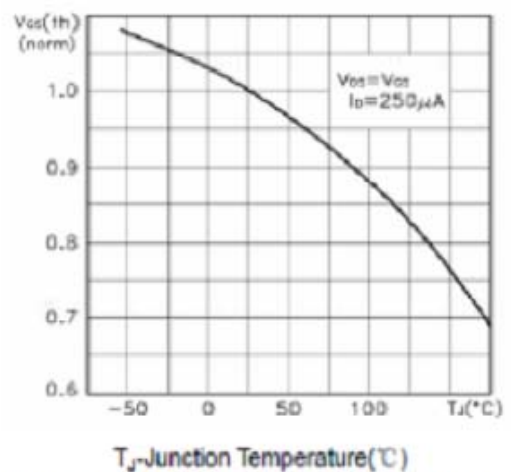


Figure 10 V_{GS(th)} vs Junction Temperature

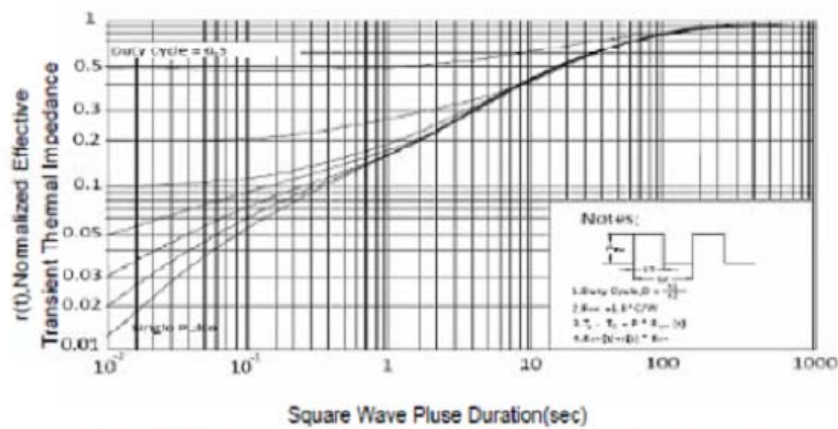
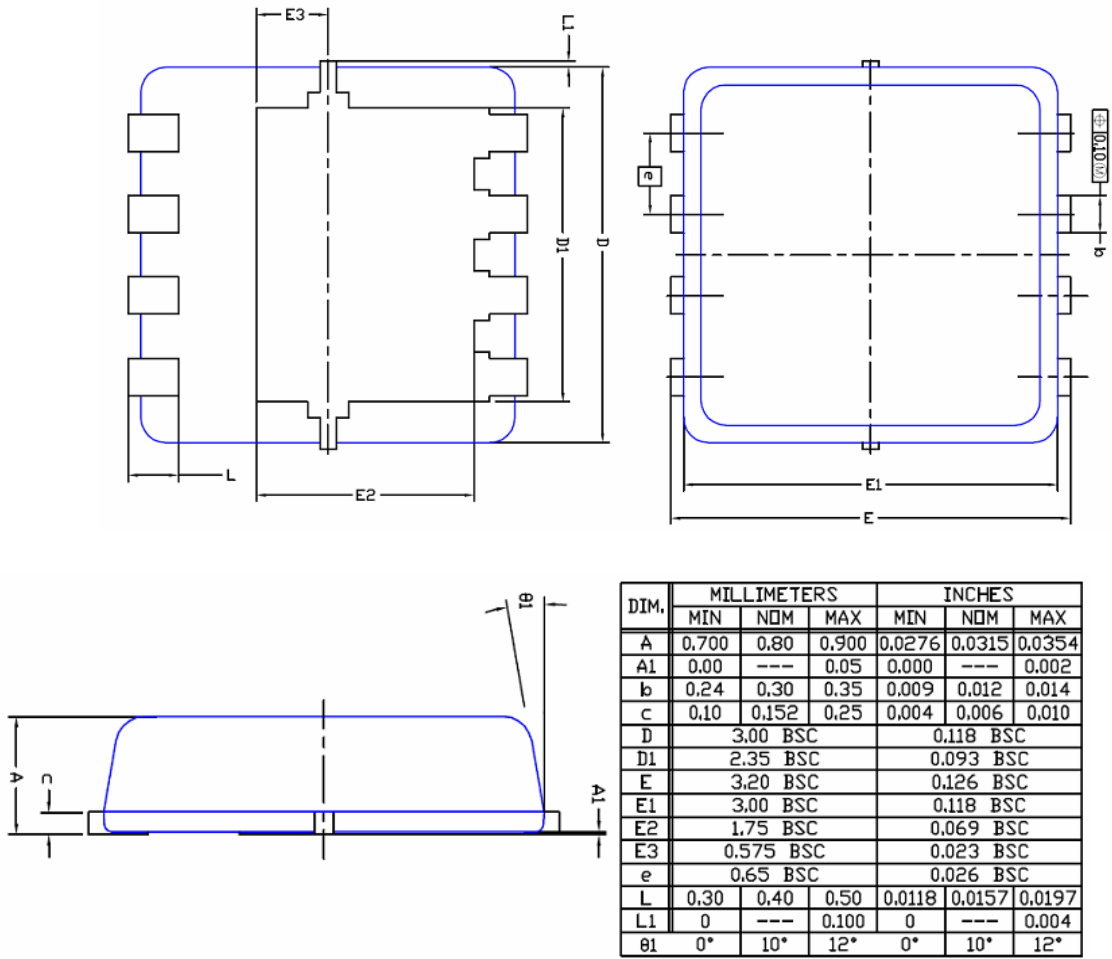


Figure 11 Normalized Maximum Transient Thermal Impedance

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Package Outline Dimension

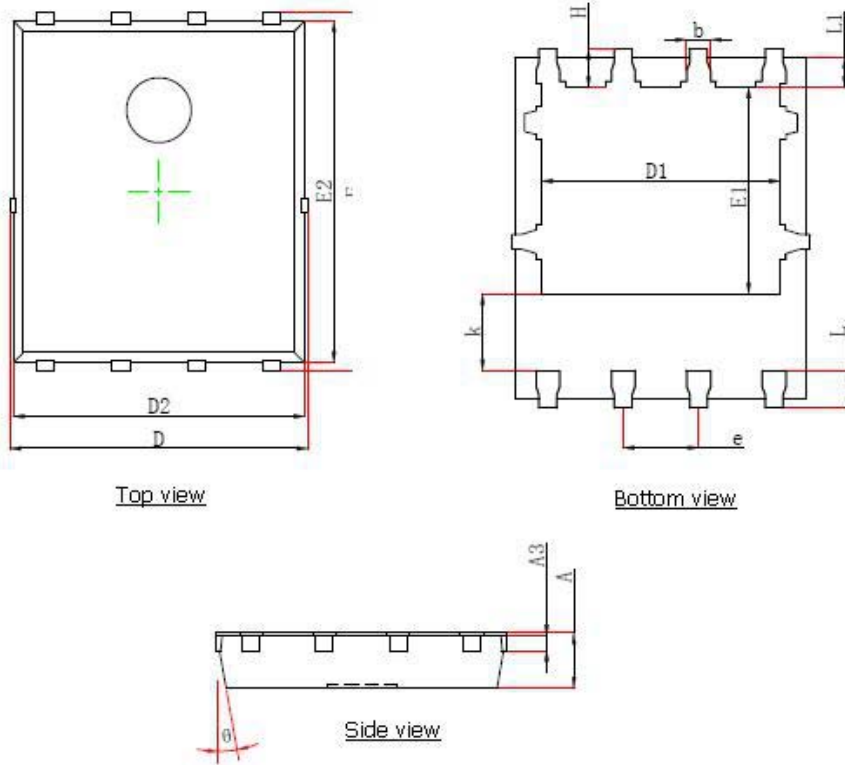
DFN3X3



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Package Outline Dimension

DFN5X6



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.000	0.035	0.039
A3	0.254REF.		0.010REF.	
D	4.944	5.096	0.195	0.201
E	5.974	6.126	0.235	0.241
D1	3.910	4.110	0.154	0.162
E1	3.375	3.575	0.133	0.141
D2	4.824	4.976	0.190	0.196
E2	5.674	5.826	0.223	0.229
k	1.190	1.390	0.047	0.055
b	0.350	0.450	0.014	0.018
e	1.270TYP.		0.050TYP.	
L	0.559	0.711	0.022	0.028
L1	0.424	0.576	0.017	0.023
H	0.574	0.726	0.023	0.029
θ	10°	12°	10°	12°

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