

SE10090G

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

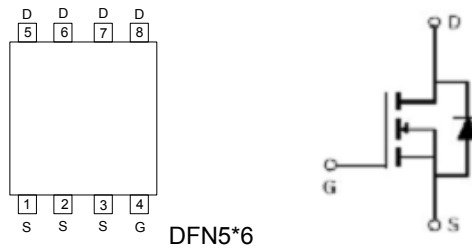
Features

For a single MOSFET

- $V_{DS} = 100V$
- $R_{DS(ON)} = 6m\Omega @ V_{GS}=10V$

Pin configurations

See Diagram below



Absolute Maximum Ratings

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current	I_D	Continuous	90
		Pulsed	360
Total Power Dissipation	P_D	135	W
Avalanche energy L=0.3mH	E_{AS}	460	mJ
Operating Junction Temperature Range	T_J	-55 to 150	$^{\circ}C$

Thermal Resistance

Symbol	Parameter	Typ	Max	Units
$R_{\theta JC}$	Thermal Resistance Junction to Case	1	1.5	$^{\circ}C/W$

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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} =0V	100			V
I _{DSS}	Drain to Source Leakage Current	V _{DS} =100V, 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	1.7	2.5	V
R _{DS(on)}	Static Drain-Source On-Resistance	V _{GS} =10V, I _D =18A	-	6	7.2	mΩ
		V _{GS} =4.5V, I _D =10A		8.8	11.2	
g _{FS}	Forward Transconductance	V _{DS} =5V, I _D =20A		50		S
DYNAMIC PARAMETERS						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =50V, f=1MHz		3458		pF
C _{oss}	Output Capacitance			423		pF
C _{rss}	Reverse Transfer Capacitance			12.5		pF
SWITCHING PARAMETERS						
Q _g	Total Gate Charge	V _{GS} =10V, V _{DS} =50V, I _D =20A		45		nC
Q _{gs}	Gate Source Charge			15		nC
Q _{gd}	Gate Drain Charge			7		nC
t _{d(on)}	Turn-On Delay Time	V _{GS} =10V, V _{DS} =50V, R _{GEN} =3Ω I _D =20A		13		ns
t _{d(off)}	Turn-Off Delay Time			26		ns
t _{d(r)}	Turn-On Rise Time			4		ns
t _{d(f)}	Turn-Off Fall Time			4.5		ns
Source-Drain Diode Characteristics						
t _{rr}	Reverse Recovery Time	T _J =25°C, I _F =20A		20		nS
Q _{rr}	Reverse Recovery Charge	Di/dt=500A/μs		185		nC

Typical Characteristics

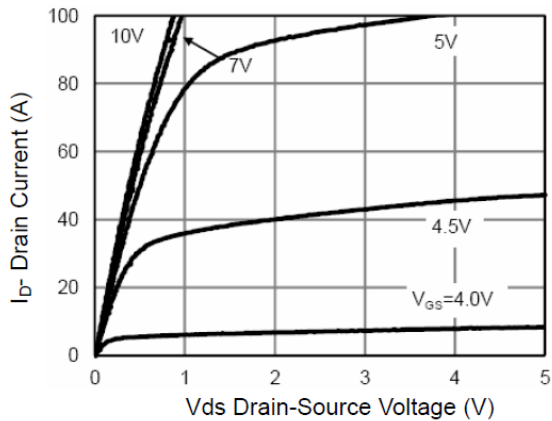


Figure 1 Output Characteristics

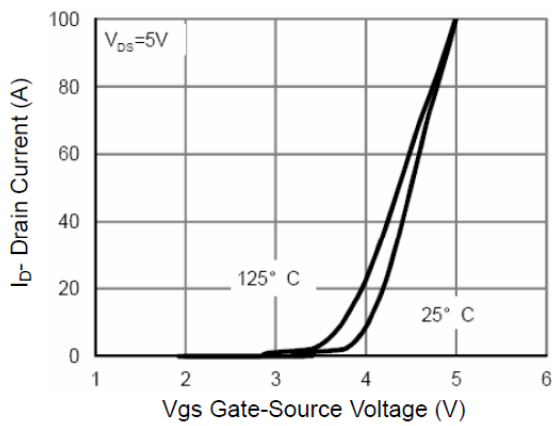


Figure 2 Transfer Characteristics

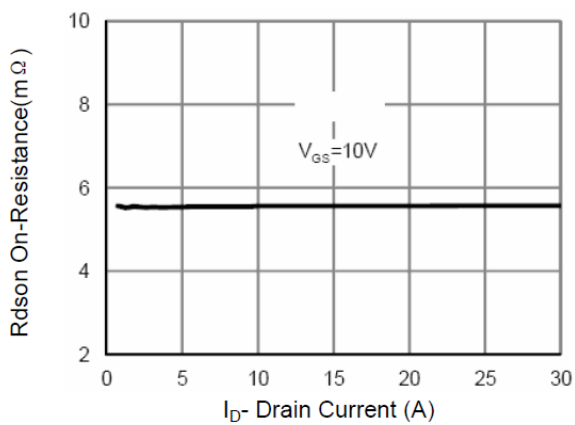


Figure 3 $R_{DS(on)}$ - Drain Current

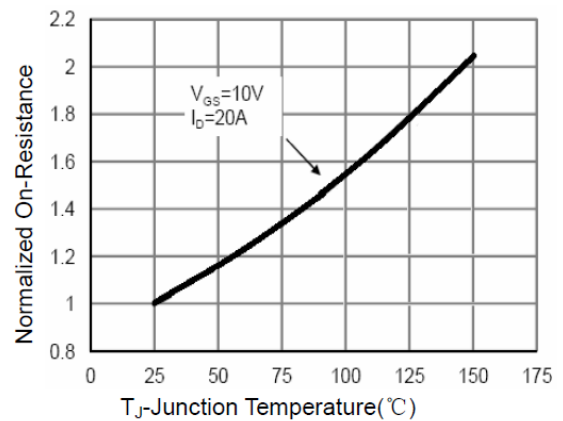


Figure 4 $R_{DS(on)}$ -Junction Temperature

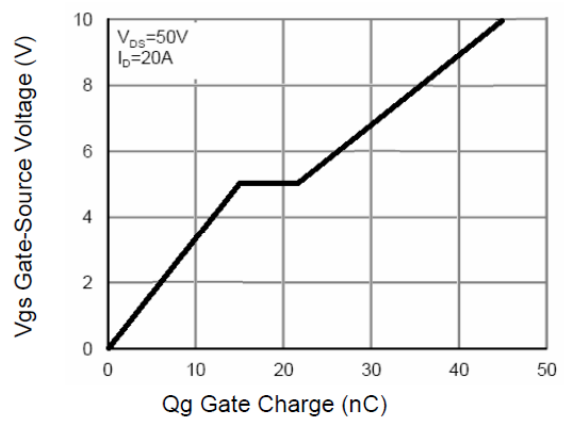


Figure 5 Gate Charge

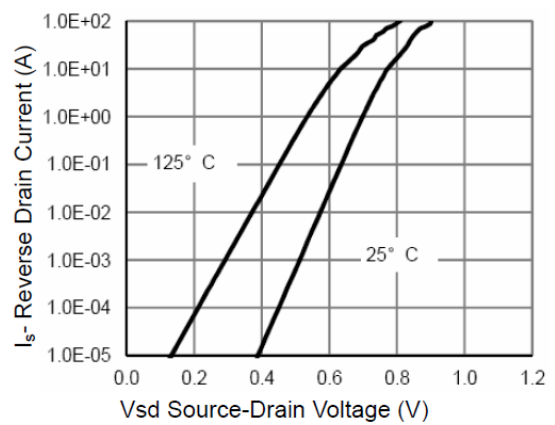


Figure 6 Source- Drain Diode Forward

Typical Characteristics

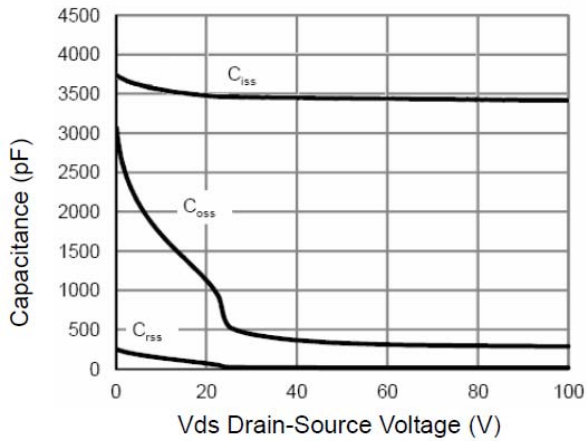


Figure 7 Capacitance vs Vds

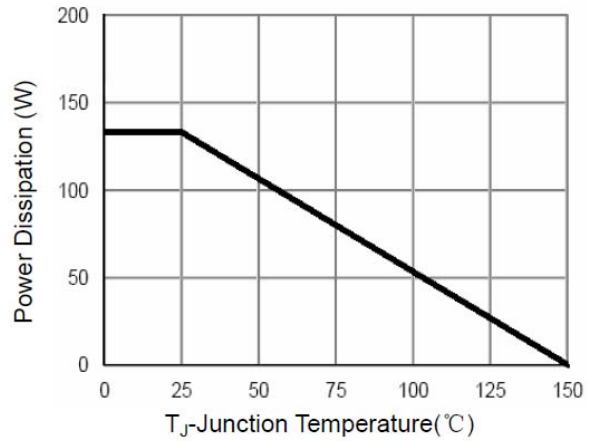


Figure 9 Power De-rating

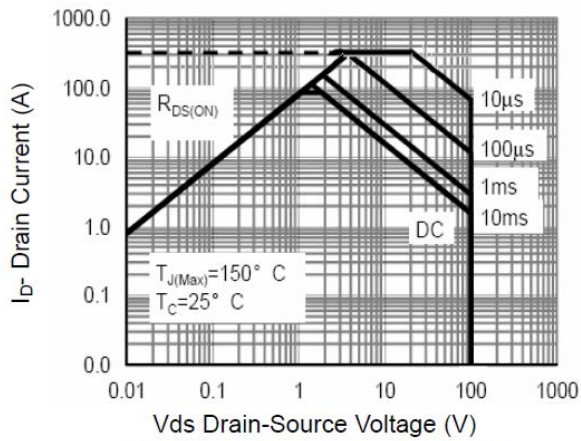


Figure 8 Safe Operation Area

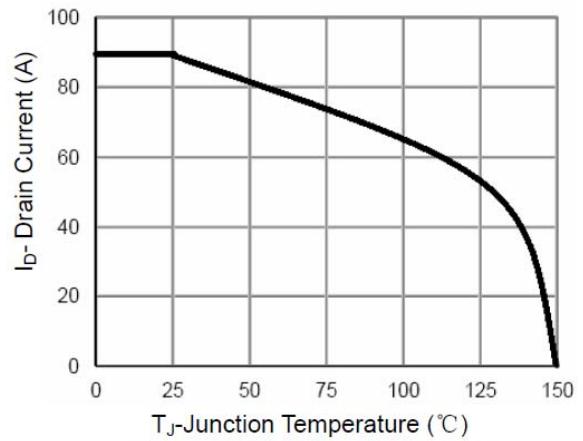


Figure 10 Current De-rating

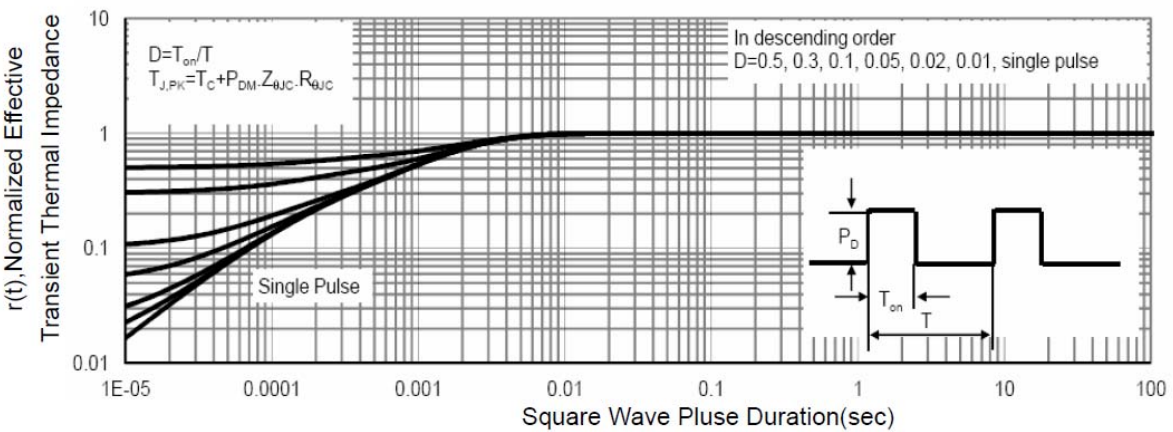
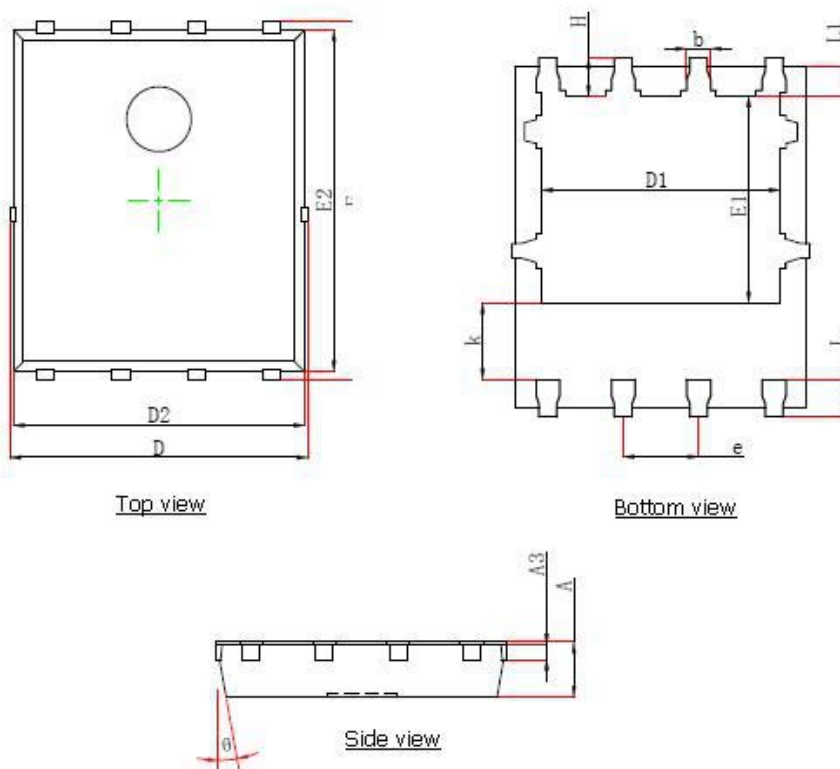


Figure 11 Normalized Maximum Transient Thermal Impedance

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Package Outline Dimension

DFN5 × 6



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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