

SE40160G

N-Channel Enhancement-Mode MOSFET

Revision: A

General Description

Thigh Density Cell Design For Ultra Low On-Resistance Fully Characterized Avalanche Voltage and Current Improved Shoot-Through FOM

- Simple Drive Requirement
- Small Package Outline
- Surface Mount Device

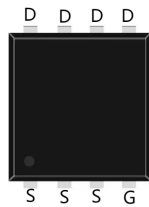
Features

For a single MOSFET

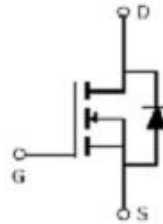
- $V_{DS} = 40V$
- $R_{DS(ON)} = 2.8m\Omega @ V_{GS}=10V$

Pin configurations

See Diagram below



DFN5*6



Absolute Maximum Ratings

Parameter		Symbol	Rating	Units
Drain-Source Voltage		V_{DS}	40	V
Gate-Source Voltage		V_{GS}	± 20	V
Drain Current	Continuous	I_D	160	A
	Pulsed		340	
Total Power Dissipation	@TA=25°C	P_D	100	W
Operating Junction Temperature Range		T_J	-55 to 175	°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)						
B _V DSS	Drain-Source Breakdown Voltage	I _D =250μA, V _{GS} =0 V	40			V
I _{DSS}	Drain to Source Leakage Current	V _{DS} =40V, V _{GS} =0V			20	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	2		4	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =10V, I _D =16A	-	2.8	3.8	mΩ
DYNAMIC PARAMETERS						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =15V, f=1MHz		7032		pF
C _{oss}	Output Capacitance			898		pF
C _{rss}	Reverse Transfer Capacitance			743		pF
SWITCHING PARAMETERS						
Q _g	Total Gate Charge ²	V _{GS} =10V, V _{DS} =15V, I _D =30A		80		nC
Q _{gs}	Gate Source Charge			19		nC
Q _{gd}	Gate Drain Charge			38		nC
t _{d(on)}	Turn-On Delay Time	V _{GS} =10V, V _{DS} =15V, R _{GEN} =1Ω I _D =1A		20		ns
t _{d(off)}	Turn-Off Delay Time			80		ns
t _{d(r)}	Turn-On Rise Time			36		ns
t _{d(f)}	Turn-Off Fall Time			33		ns
Thermal Resistance						
Symbol	Parameter		Typ	Max		Units
R _{θJC}	Thermal Resistance Junction to Case(t≤10s)		-	1.5		°C/W

Typical Characteristics

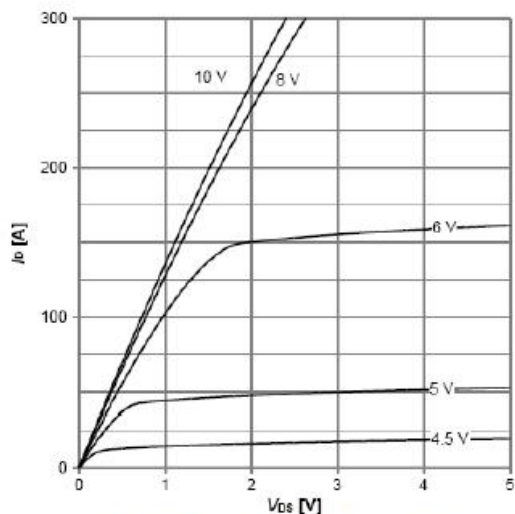


Figure 1: On-Region Characteristics

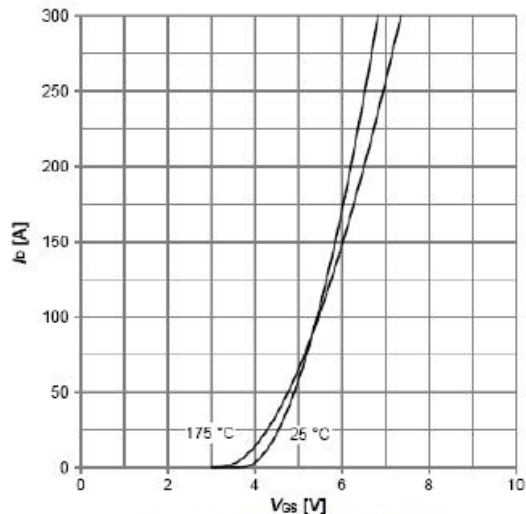


Figure 2: Transfer Characteristics

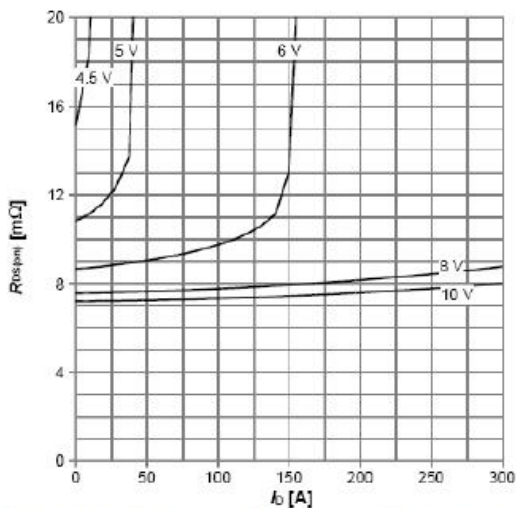


Figure 3: On-Resistance vs Drain current and Gate voltage

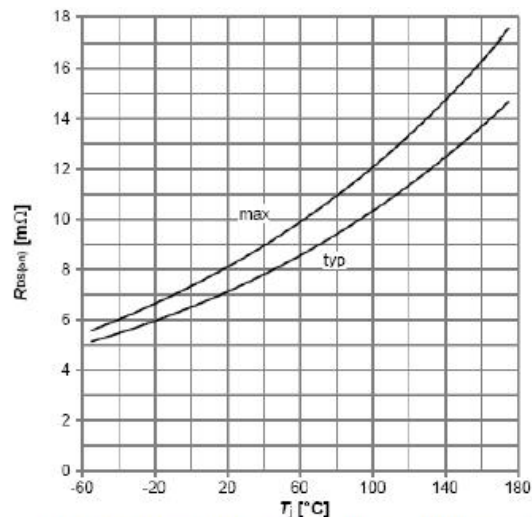


Figure 4: On-Resistance vs Junction Temperature

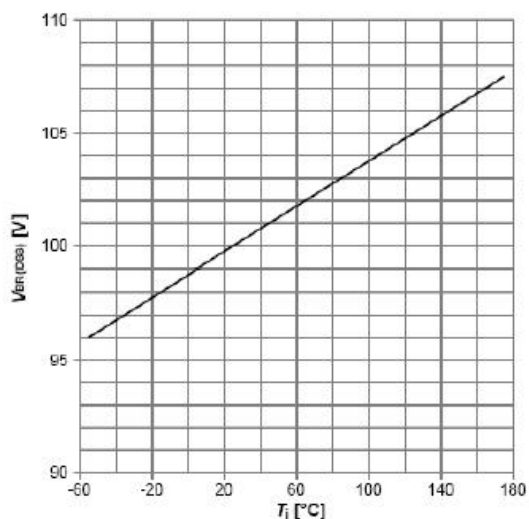


Figure 5: Drain-Source breakdown voltage

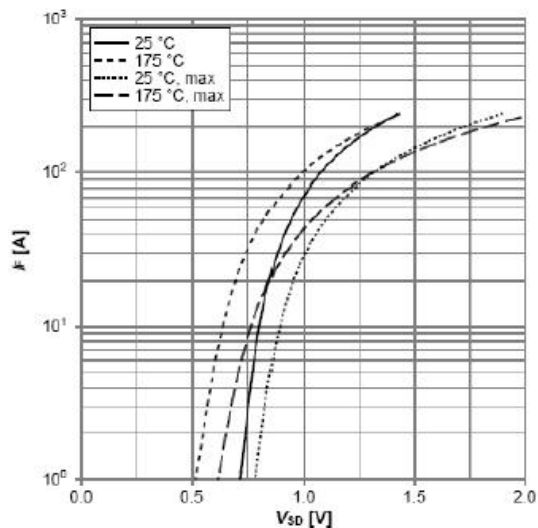


Figure 6: Body-Diode Characteristics

Typical Characteristics

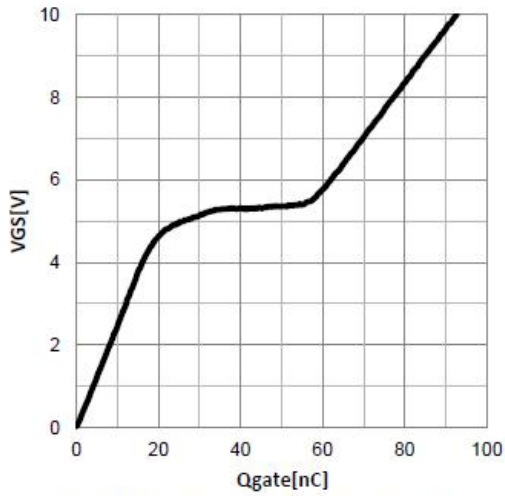


Figure 7: Gate-Charge Characteristics

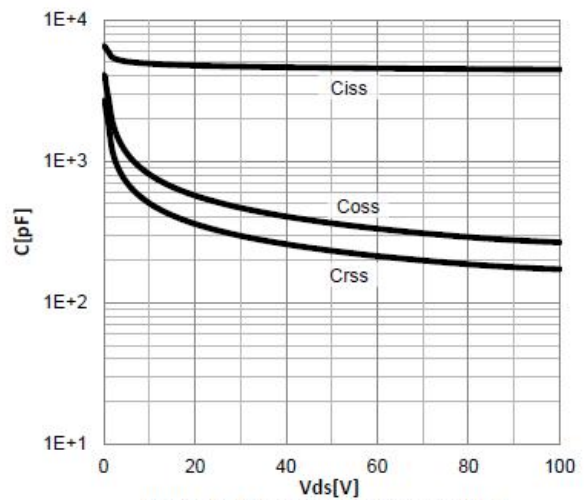


Figure 8: Capacitance Characteristics

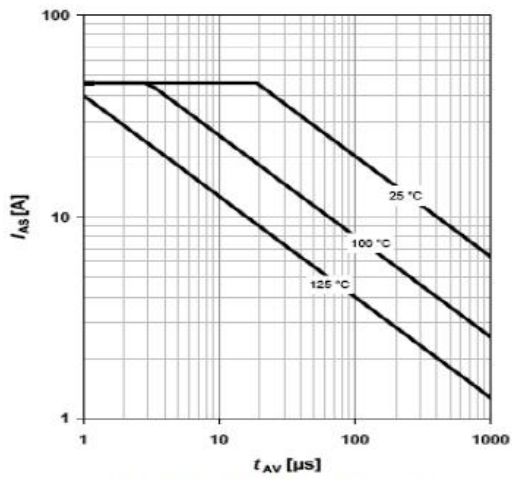


Figure 9: Avalanche Characteristics

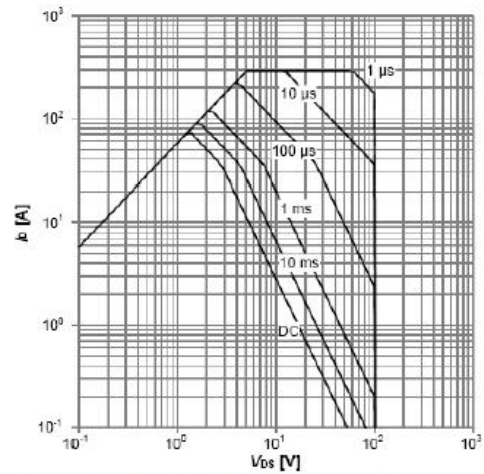


Figure 10: Maximum Forward Biased Safe Operating Area

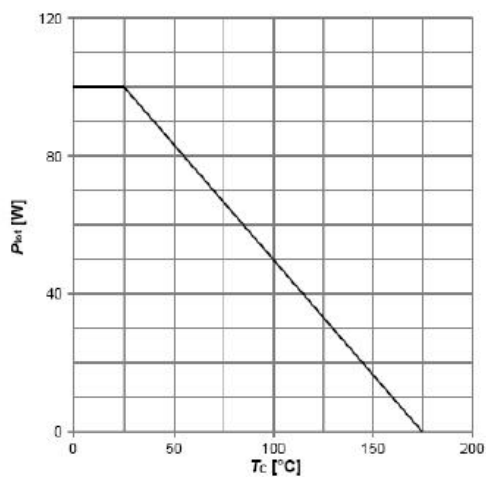


Figure 11: Power dissipation

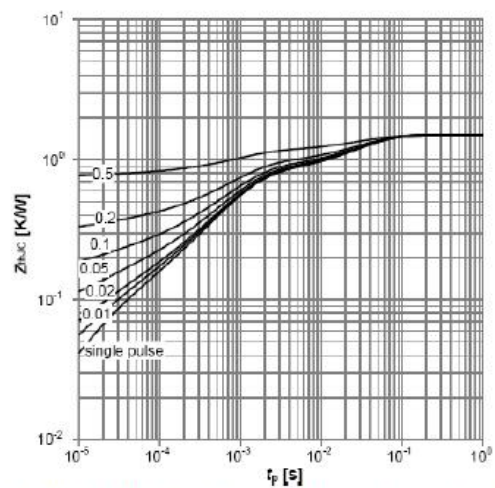
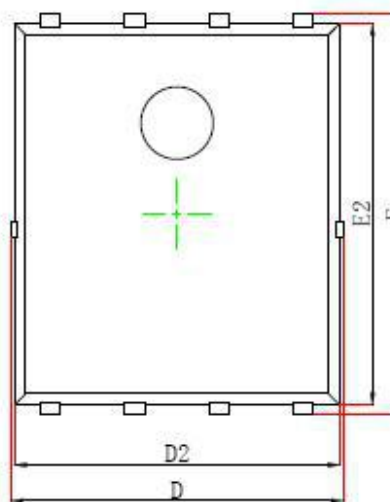


Figure 12: Maximum Transient Thermal Impedance

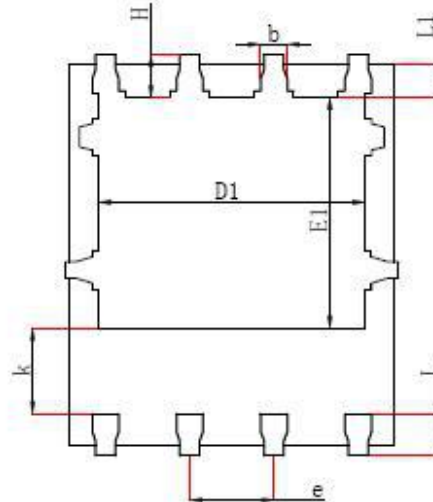
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Package Outline Dimension

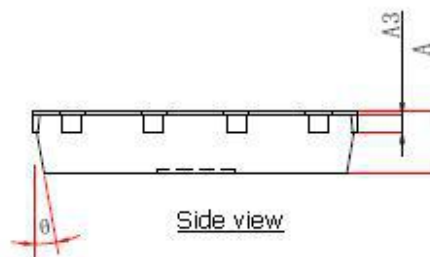
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Top view



Bottom view



Side view

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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