

SE2N60B

N-Channel Enhancement-Mode MOSFET

Revision: A

General Description

This series is a high voltage power MOSFET and is designed to have better characteristics, such as fast switching time, low gate charge, low on-state resistance and have a high rugged avalanche characteristics

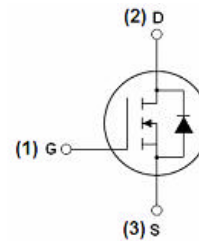
Features

For a single MOSFET

- $V_{DS} = 600V$
- $R_{DS(ON)} = 3.4\Omega @ V_{GS}=10V$

Pin configurations

See Diagram below



TO-252

Absolute Maximum Ratings

Parameter		Symbol	Rating	Units
Drain-Source Voltage		V_{DS}	600	V
Gate-Source Voltage		V_{GS}	± 30	V
Drain Current	Continuous	I_D	2	A
	Pulsed		8	
Avalanche Energy Single Pulsed ³		E_{AS}	180	mJ
Peak Diode Recovery dv/dt^4		Dv/dt	4.5	V/ns
Power Dissipation		P_D	33	W
Operating Junction Temperature Range		T_J	-55 to 150	$^{\circ}C$

Thermal Resistance

Symbol	Parameter	Typ.	Max.	Units
$R_{\theta JA}$	Junction to Ambient ($t \leq 10s$)		62.5	$^{\circ}C/W$

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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	V _{GS} =0V, I _D =250μA,	600			V
I _{DSS}	Drain to Source Leakage Current	V _{DS} =600V, V _{GS} =0V			1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =30V			100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D =250μA	2.5		4.5	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =1A		3.4	4.3	Ω
DYNAMIC PARAMETERS						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =25V, f=1MHz		520	680	pF
C _{oss}	Output Capacitance			60	80	pF
C _{rss}	Reverse Transfer Capacitance			8	10.5	pF
SWITCHING PARAMETERS						
Q _g	Total Gate Charge ²	V _{GS} =10V, V _{DS} =520V, I _D =2A		10.5	13.5	nC
Q _{gs}	Gate Source Charge			2.5		nC
Q _{gd}	Gate Drain Charge			4.0		nC
t _{d(on)}	Turn-On Delay Time	V _{DS} =325V, R _{GEN} =25Ω I _D =2A		11	33	ns
t _{d(off)}	Turn-Off Delay Time			45	90	ns
t _{d(r)}	Turn-On Rise Time			40	88	ns
t _{d(f)}	Turn-Off Fall Time			48	100	ns
Source-Drain Diode Characteristics						
V _{SD}	Drain-Source Diode Forward Voltage	V _{GS} =0V, I _S =2A			1.4	V
I _S	Max Drain-Source Diode Current				2	A
I _{SM}	Max Pulse Drain-Source Current				8	A
t _{rr}	Reverse Recovery Time	V _{GS} =0V, I _S =2A		300		ns
Q _{RR}	Reverse Recovery Charge	dI _F /dt=100A/μs ¹		2.2		μC

Typical Characteristics

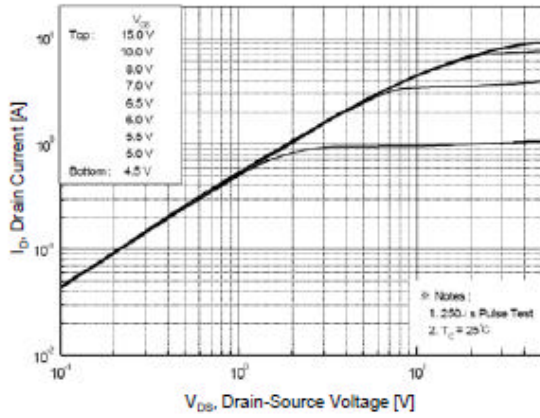


Figure 1. On Region Characteristics

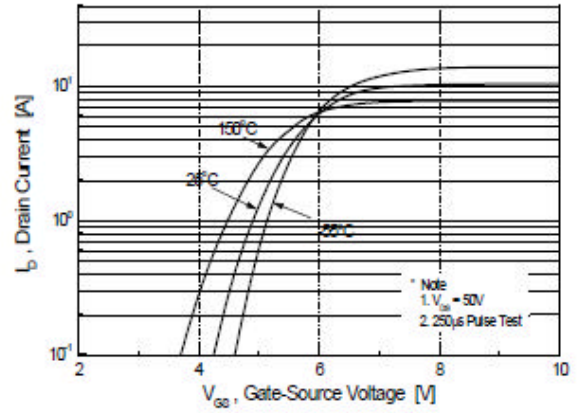


Figure 2. Transfer Characteristics

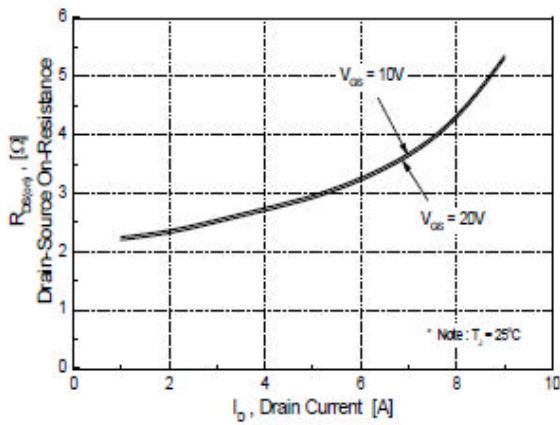


Figure 3. On Resistance Variation vs Drain Current and Gate Voltage

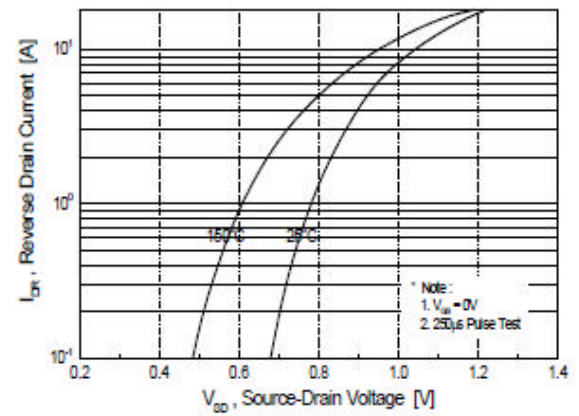


Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

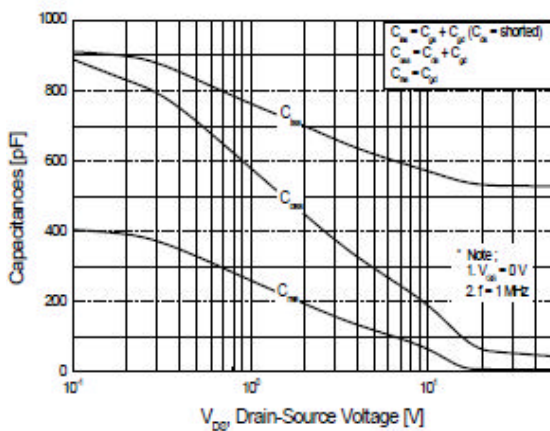


Figure 5. Capacitance Characteristics

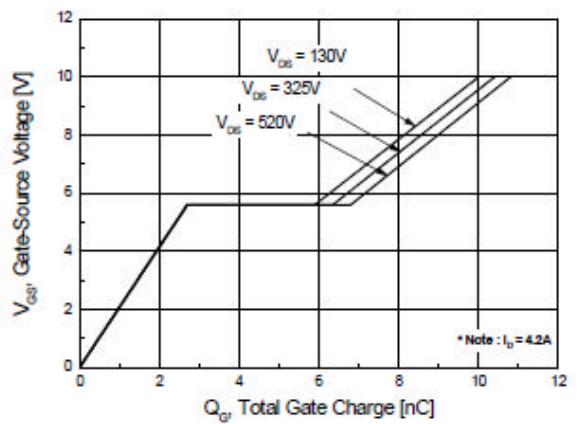


Figure 6. Gate Charge Characteristics

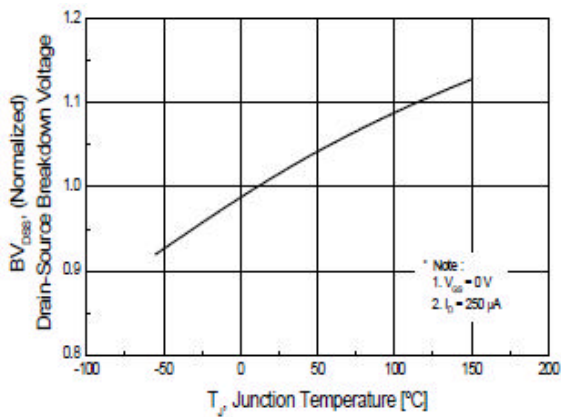


Figure 7. Breakdown Voltage Variation vs Temperature

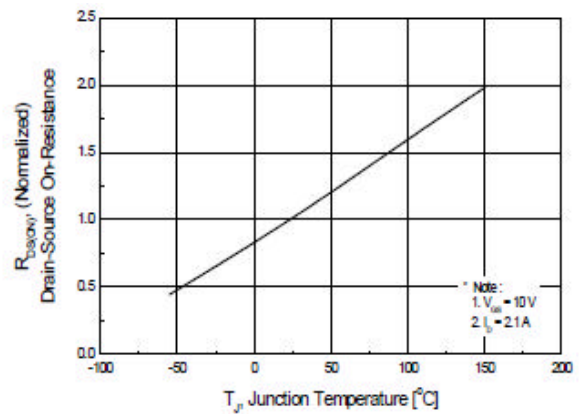


Figure 8. On-Resistance Variation vs Temperature

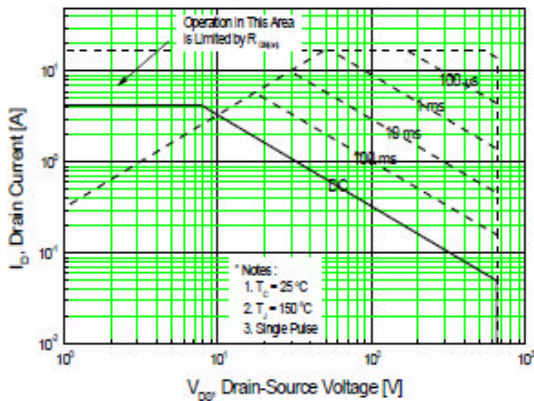


Figure 9. Maximum Safe Operating Area

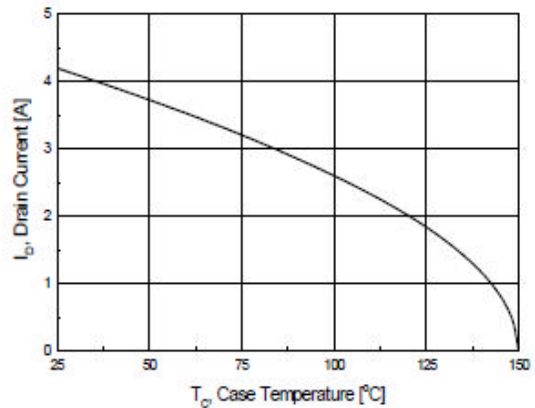


Figure 10. Maximum Drain Current vs Case Temperature

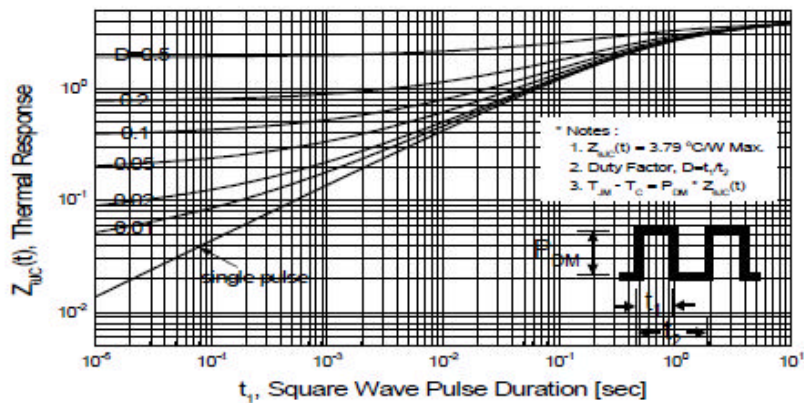
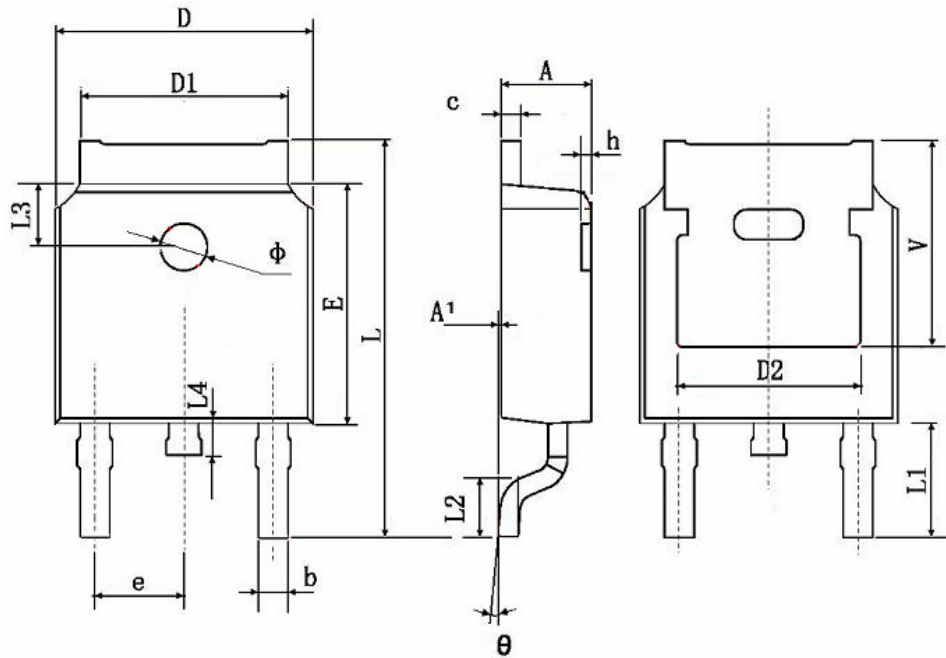


Figure 11. Transient Thermal Response Curve

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Package Outline Dimension

TO-252



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	0.483 TYP.		0.190 TYP.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 TYP.		0.114 TYP.	
L2	1.400	1.700	0.055	0.067
L3	1.600 TYP.		0.063 TYP.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 TYP.		0.211 TYP.	

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