

SE100300G

N-Channel Enhancement-Mode MOSFET

Revision: A

General Description

Advanced trench technology to provide excellent $R_{DS(ON)}$, 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

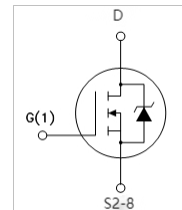
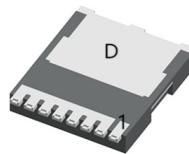
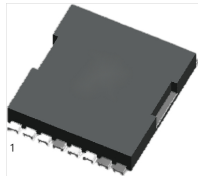
Features

For a single MOSFET

- $V_{DS} = 100V$
- $R_{DS(ON)} = 1.8m\Omega @ V_{GS}=10V$

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	Continuous	I_D	260	A
	Pulsed		800	
Single pulse avalanche energy		E_{AS}	1200	mJ
Total Power Dissipation	@TA=25°C	P_D	375	W
Operating Junction Temperature Range		T_J	-55 to 175	°C

SE100300G

Electrical Characteristics (TJ=25℃ 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	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	2	3	4	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =10V, I _D =100A	-	1.8	2.4	mΩ
g _{FS}	Forward Transconductance	V _{DS} =5V, I _D =20A		75		S
DYNAMIC PARAMETERS						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =50V, f=1MHz		10090		pF
C _{oss}	Output Capacitance			850		pF
C _{rss}	Reverse Transfer Capacitance			16		pF
SWITCHING PARAMETERS						
Q _g	Total Gate Charge ²	V _{GS} =10V, V _{DS} =50V, I _D =20A		125		nC
Q _{gs}	Gate Source Charge			36		nC
Q _{gd}	Gate Drain Charge			14		nC
t _{d(on)}	Turn-On Delay Time	V _{GS} =10V, V _{DS} =50V, R _{GEN} =3Ω I _D =20A		35		ns
t _{d(off)}	Turn-Off Delay Time			70		ns
t _{d(r)}	Turn-On Rise Time			22		ns
t _{d(f)}	Turn-Off Fall Time			12		ns
Thermal Resistance						
Symbol	Parameter		Typ	Max	Units	
R _{θJC}	Thermal Resistance Junction to Case(t≤10s)		-	0.4	℃/W	

Typical Characteristics

Fig 1. Typical Output Characteristics

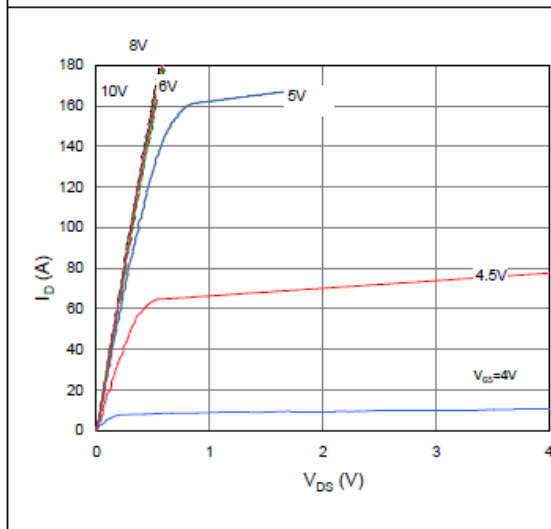


Figure 2. On-Resistance vs. Gate-Source Voltage

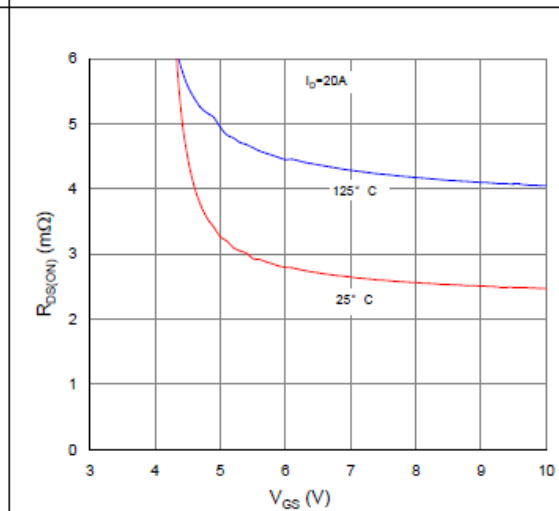


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

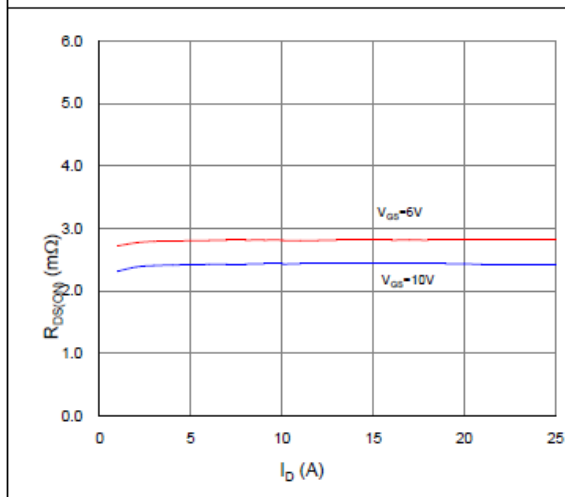


Figure 4. Normalized On-Resistance vs. Junction Temperature

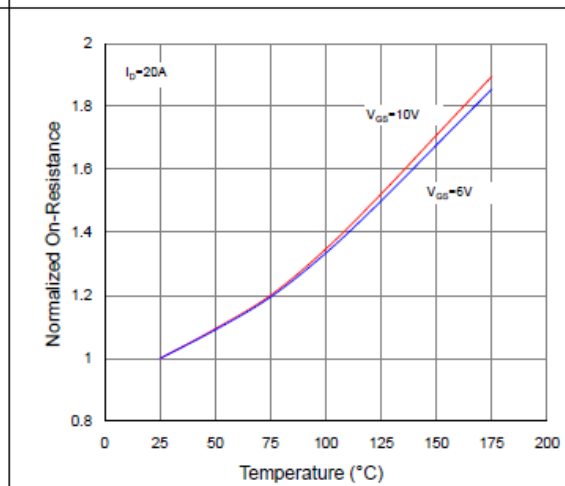


Figure 5. Typical Transfer Characteristics

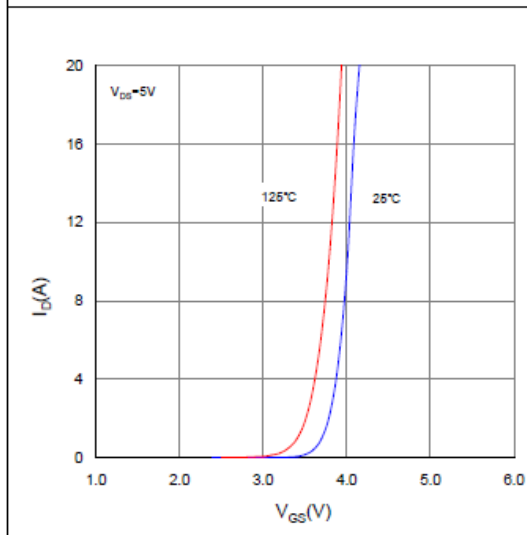
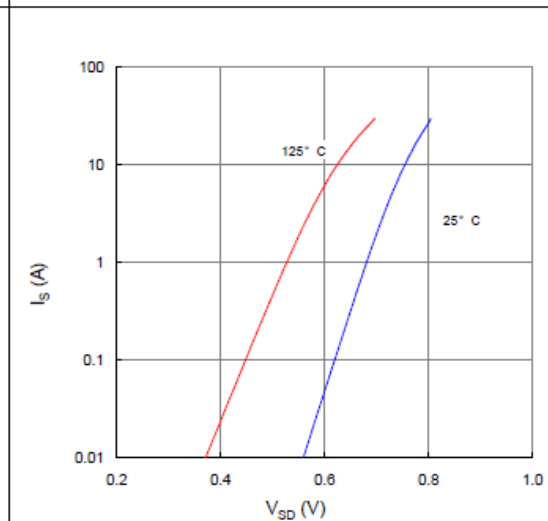


Figure 6. Typical Source-Drain Diode Forward Voltage



Typical Characteristics

Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage

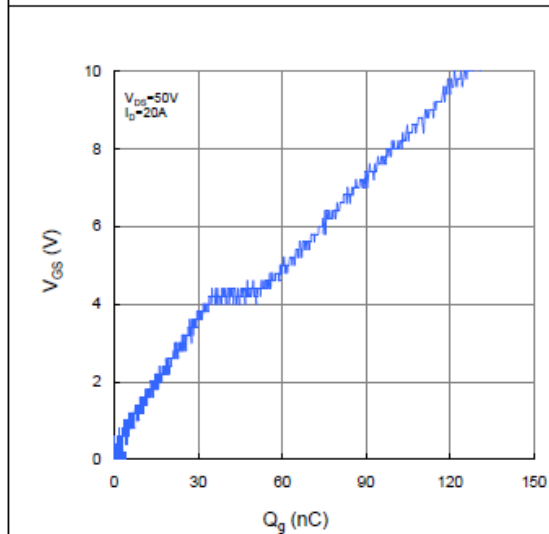


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

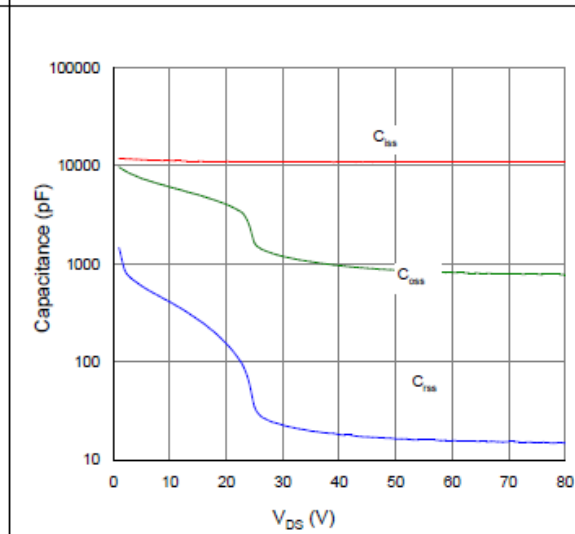


Figure 9. Maximum Safe Operating Area

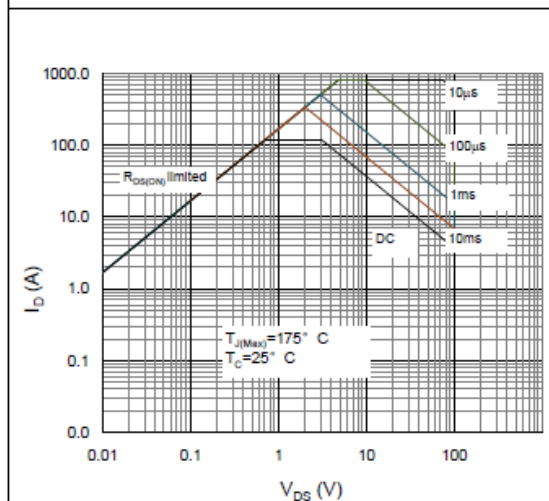


Figure 10. Maximum Drain Current vs. Case Temperature

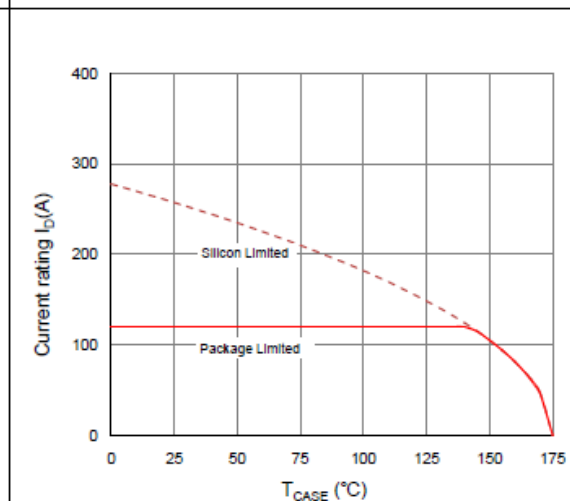
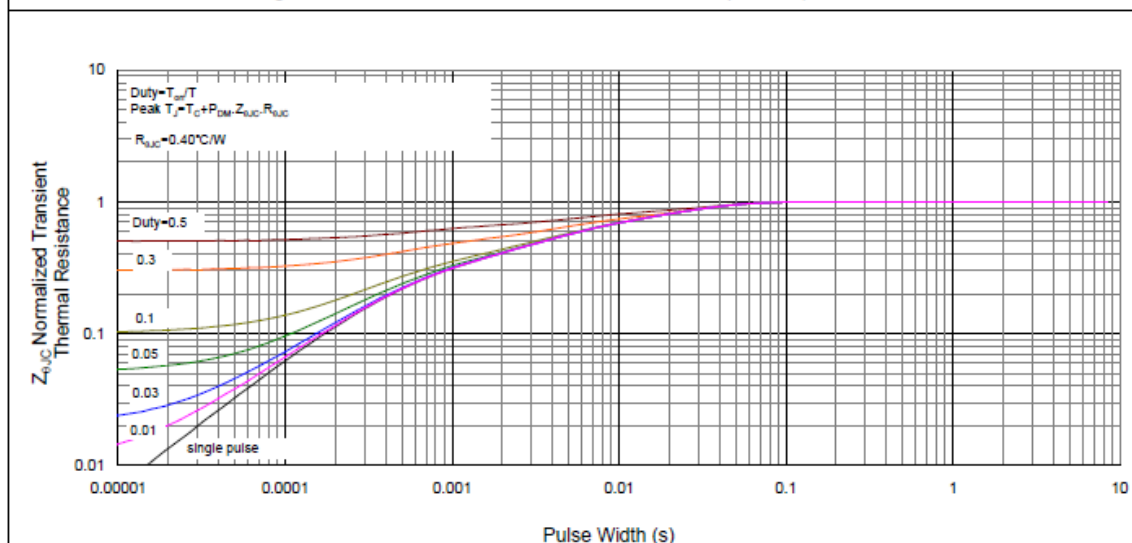


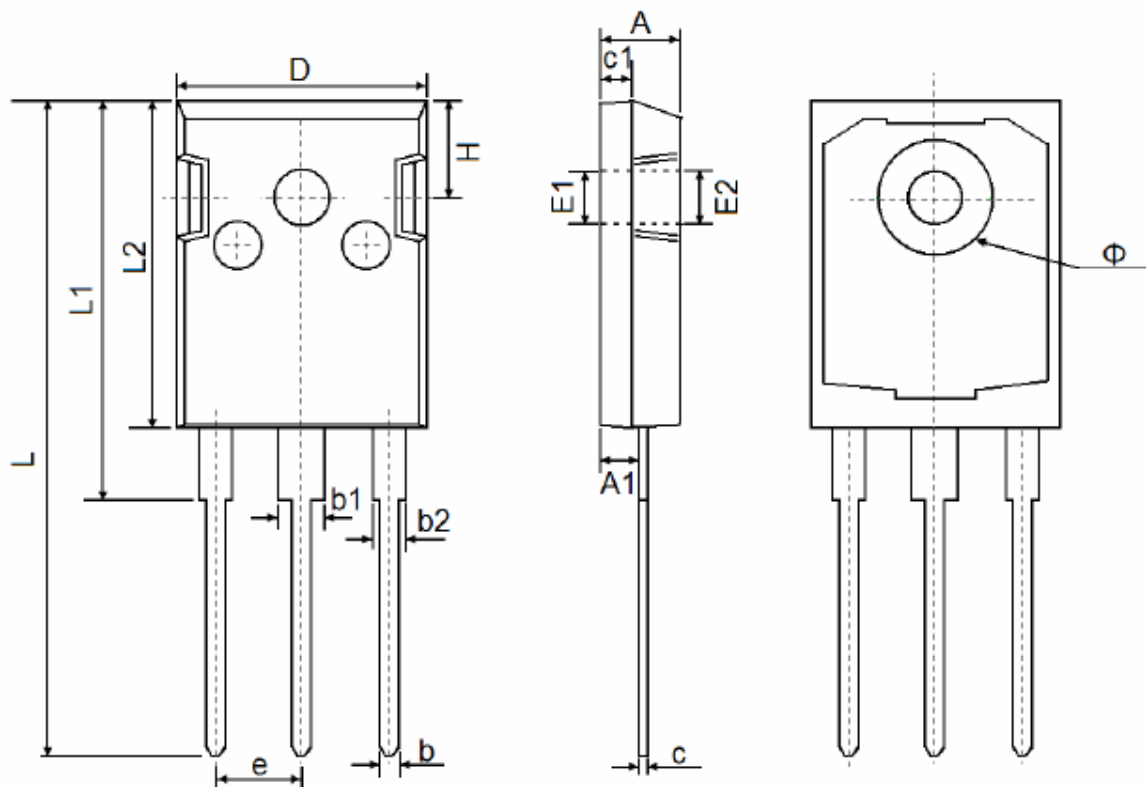
Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Case



SE100300G

Package Outline Dimension

TO-247



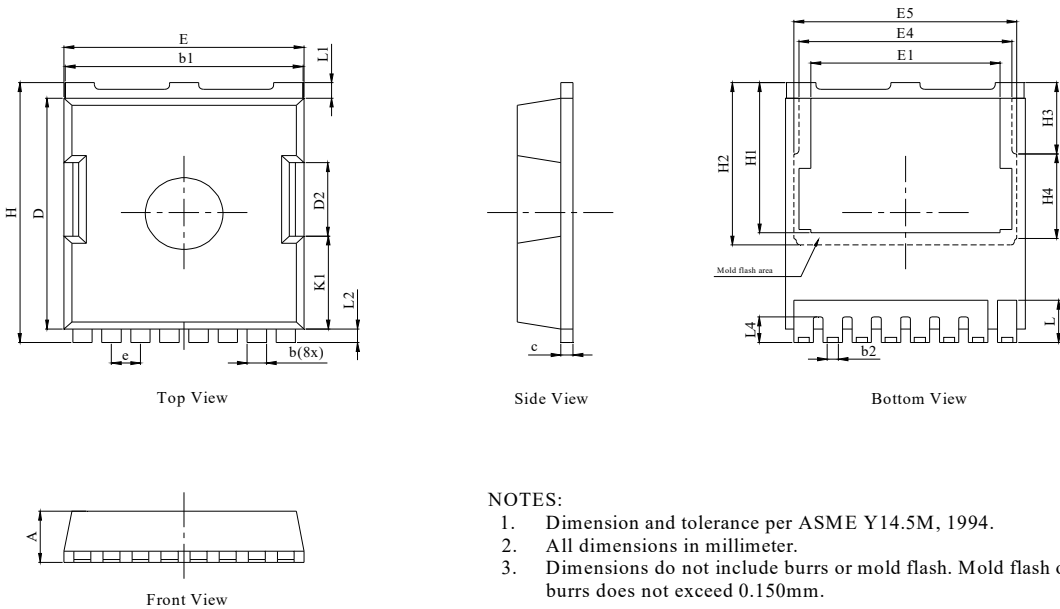
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.850	5.150	0.191	0.200
A1	2.200	2.600	0.087	0.102
b	1.000	1.400	0.039	0.055
b1	2.800	3.200	0.110	0.126
b2	1.800	2.200	0.071	0.087
c	0.500	0.700	0.020	0.028
c1	1.900	2.100	0.075	0.083
D	15.450	15.750	0.608	0.620
E1	3.500 REF		0.138 REF	
E2	3.600 REF		0.142 REF	
L	40.900	41.300	1.610	1.626
L1	24.800	25.100	0.976	0.988
L2	20.300	20.600	0.799	0.811
Φ	7.100	7.300	0.280	0.287
e	5.450 TYP		0.215 TYP	
H	5.980 REF		0.235 REF	

SE100300G

Package Outline Dimension

TOLL

Package Outlines



- NOTES:
- 1. Dimension and tolerance per ASME Y14.5M, 1994.
 - 2. All dimensions in millimeter.
 - 3. Dimensions do not include burrs or mold flash. Mold flash or burrs does not exceed 0.150mm.

DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	2.20	2.30	2.40
b	0.70	0.80	0.90
b1	9.70	9.80	9.90
b2	0.42	0.46	0.50
c	0.40	0.50	0.60
D	10.28	10.38	10.58
D2		3.30	
E	9.70	9.90	10.10
E1		7.80	
E4		8.80	
E5		9.20	
e		1.20 (BSC)	
H	11.48	11.68	11.88
H1	6.55	6.75	6.85
H2		7.30	
H3		3.20	
H4		3.80	
K1		4.18	
L	1.70	1.90	2.10
L1		0.70	
L2		0.60	
L4	1.00	1.15	1.30

Recommended Soldering Footprint

