

SE60120GTS

**N-Channel Enhancement-Mode MOSFET**

Revision: A

**General Description**

This type used advanced trench technology and design to provide excellent  $R_{DS(ON)}$  with low gate charge.

- High density cell design for ultra low  $R_{DS(ON)}$
- Excellent package for good heat dissipation

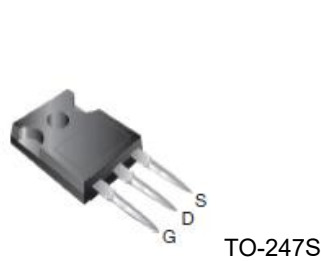
**Features**

For a single MOSFET

- $V_{DS} = 60V$
- $R_{DS(ON)} = 3.0m\Omega @ V_{GS}=10V$

**Pin configurations**

See Diagram below



**Absolute Maximum Ratings**

Parameter		Symbol	Rating	Units
Drain-Source Voltage		$V_{DS}$	60	V
Gate-Source Voltage		$V_{GS}$	$\pm 20$	V
Drain Current	Continuous	$I_D$	120	A
	Pulsed		420	
Total Power Dissipation	@TA=25°C	$P_D$	85	W
Operating Junction Temperature Range		$T_J$	-55 to 175	°C

## SE60120GTS

Electrical Characteristics (T <sub>J</sub> =25°C unless otherwise noted)						
Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
<b>OFF CHARACTERISTICS (Note 2)</b>						
B <sub>V</sub> DSS	Drain-Source Breakdown Voltage	I <sub>D</sub> =250μA, V <sub>GS</sub> =0 V	60			V
I <sub>DSS</sub>	Drain to Source Leakage Current	V <sub>DS</sub> =48V, V <sub>GS</sub> =0V			1	μA
I <sub>GSS</sub>	Gate-Body Leakage Current	V <sub>GS</sub> =20V			100	nA
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> =250μA	1.2		2.3	V
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance	V <sub>GS</sub> =10V, I <sub>D</sub> =20A		3.0	4.0	mΩ
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =5V, I <sub>D</sub> =20A		65		S
<b>DYNAMIC PARAMETERS</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> =0V, V <sub>DS</sub> =30V, f=1MHz		3458		pF
C <sub>oss</sub>	Output Capacitance			1522		pF
C <sub>rss</sub>	Reverse Transfer Capacitance			22		pF
<b>SWITCHING PARAMETERS</b>						
Q <sub>g</sub>	Total Gate Charge <sup>2</sup>	V <sub>GS</sub> =10V, V <sub>DS</sub> =30V, I <sub>D</sub> =20A		58		nC
Q <sub>gs</sub>	Gate Source Charge			16		nC
Q <sub>gd</sub>	Gate Drain Charge			4		nC
t <sub>d(on)</sub>	Turn-On Delay Time	V <sub>GS</sub> =10V, V <sub>DS</sub> =30V, R <sub>GEN</sub> =3Ω		18		ns
t <sub>d(off)</sub>	Turn-Off Delay Time			50		ns
t <sub>d(r)</sub>	Turn-On Rise Time			8		ns
t <sub>d(f)</sub>	Turn-Off Fall Time			10.5		ns

Typical Characteristics

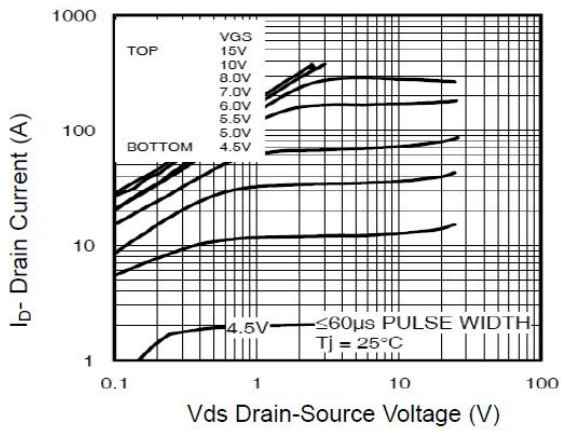


Figure 1 Output Characteristics

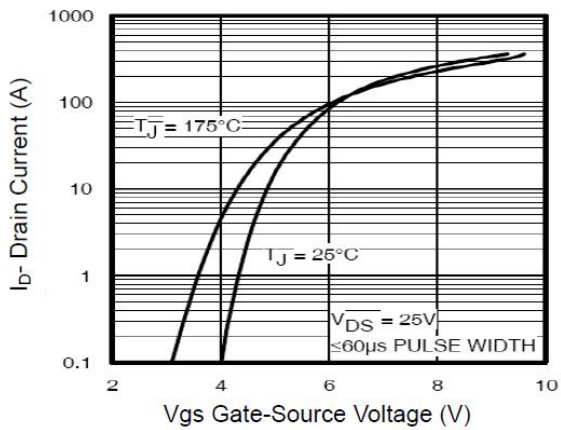


Figure 2 Transfer Characteristics

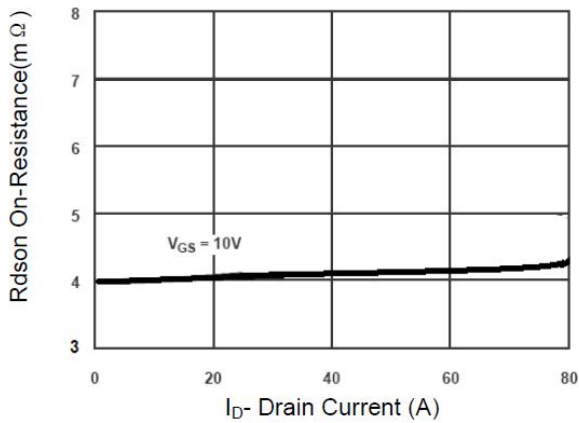


Figure 3 Rdson- Drain Current

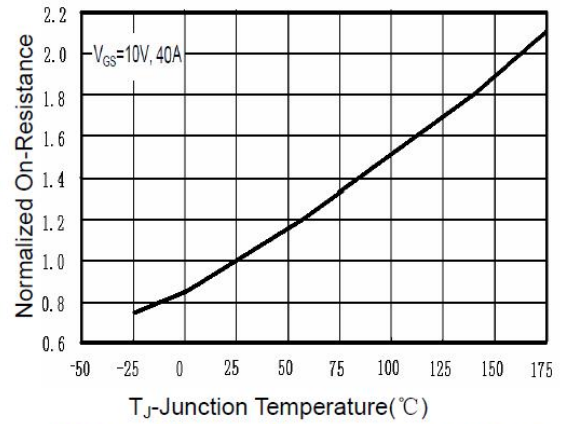


Figure 4 Rdson-Junction Temperature

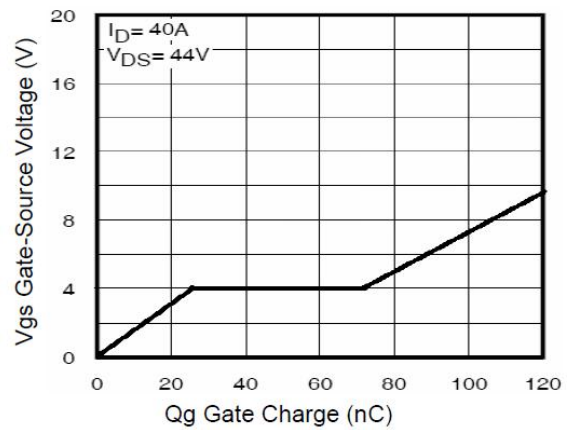


Figure 5 Gate Charge

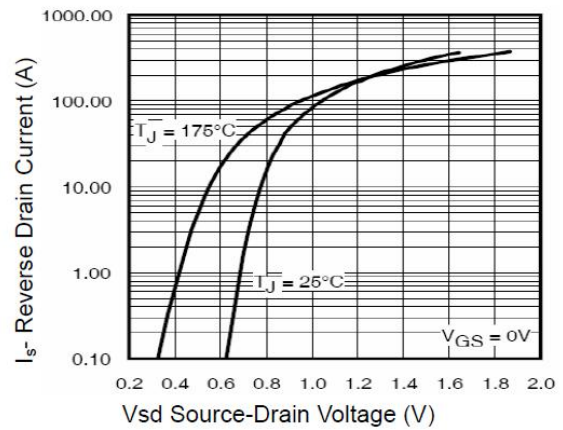


Figure 6 Source- Drain Diode Forward

Typical Characteristics

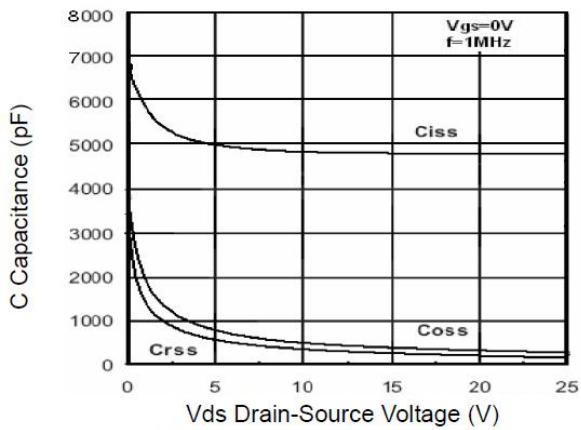


Figure 7 Capacitance vs Vds

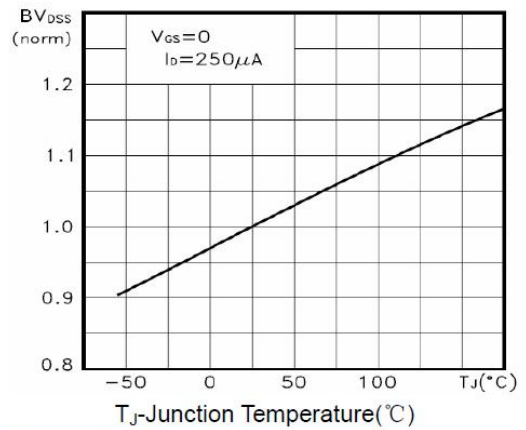


Figure 9  $BV_{DSS}$  vs Junction Temperature

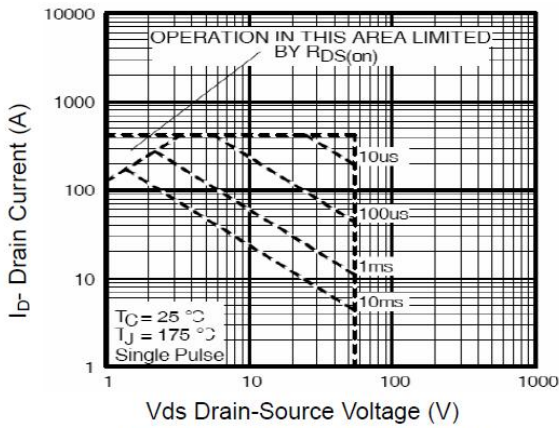


Figure 8 Safe Operation Area

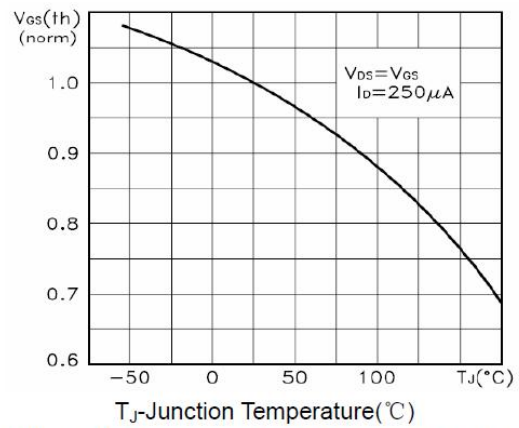


Figure 10  $V_{GS(th)}$  vs Junction Temperature

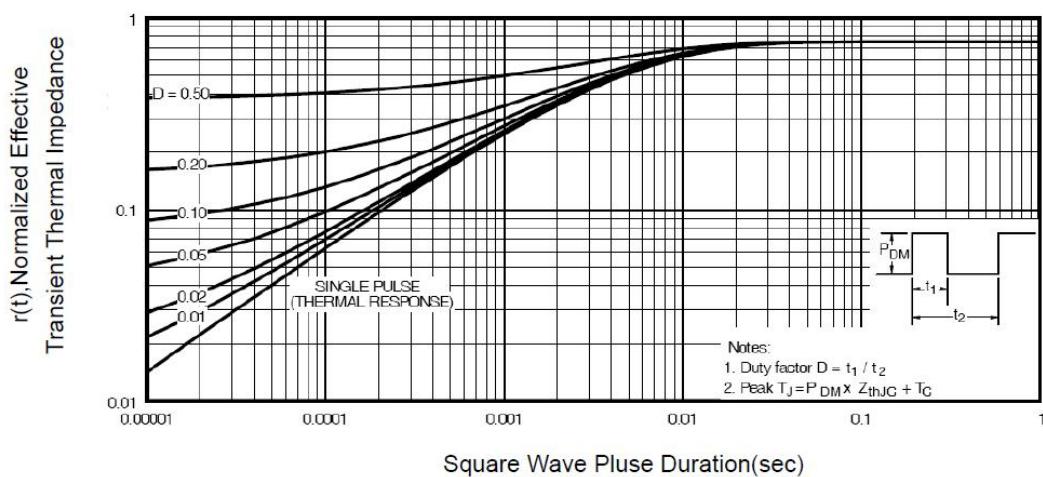
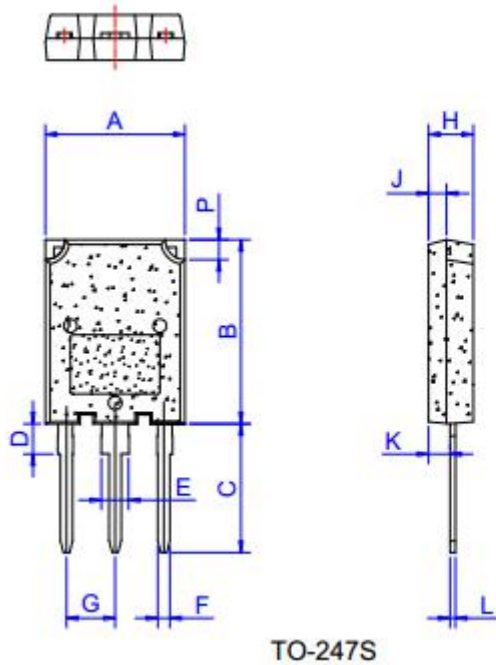


Figure 11 Normalized Maximum Transient Thermal Impedance

# SE60120GTS

## Package Outline Dimension

### TO-247S



TO-247S

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	15.1		16.1	0.594		0.634
B	19.8		20.8	0.78		0.819
C	13.8		14.8	0.543		0.583
D	3.00		4.00	0.118		0.157
E	2.75		3.35	0.108		0.132
F	1.30		1.50	0.051		0.059
G	5.10		5.80	0.201		0.228
H	4.50		5.50	0.177		0.217
J	1.45		2.15	0.057		0.085
K	1.90		2.80	0.075		0.110
L	0.55		0.80	0.022		0.031
P	2.00		2.40	0.079		0.094

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