



South Sea Semiconductor

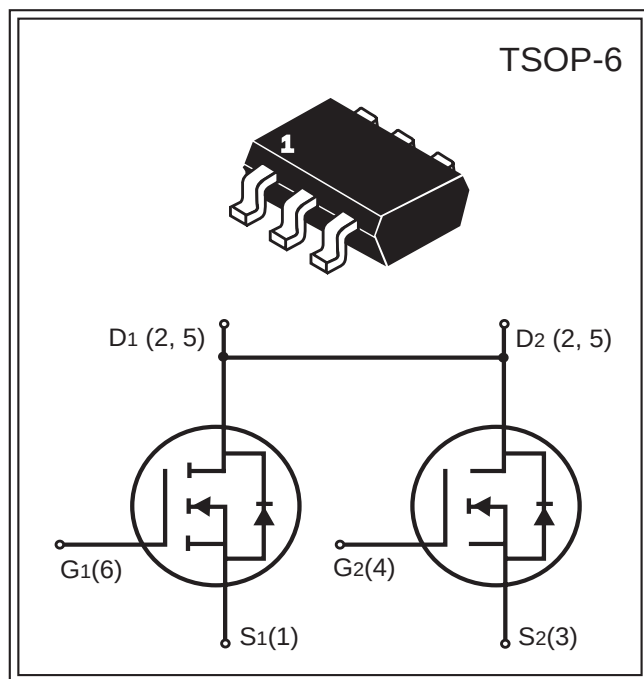
SSS5N20

Dual N-Channel Enhancement Mode MOSFET

Product Summary		
V _{DS} (V)	I _D (A)	R _{DS(ON)} (mΩ) Max
20V	4A	30 @V _{GS} = 4.5V
		45 @V _{GS} = 2.5V

FEATURES

- ◆ Super high dense cell design for low R_{DS(ON)}.
- ◆ Rugged and reliable.
- ◆ Surface Mount package.



ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V _{DS}	20	V
Gate-Source Voltage	V _{GS}	±10	V
Drain Current-Continuous @ T _J = 25°C	I _D	4	A
-Pulsed ^b	I _{DM}	25	A
Drain-Source Diode Forward Current ^a	I _S	2	A
Maximum Power Dissipation ^a	P _D	1.25	W
Operating Junction and Storage Temperature Range	T _J , T _{STG}	-55 to 150	°C

THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Ambient ^a	R _{θJA}	100	°C/W
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South Sea Semiconductor reserves the right to make changes to improve reliability or manufacturability without advance notice.

South Sea Semiconductor, October 2005 (Rev 2.1)

Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ ^c	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	20			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=16V, V_{GS}=0V$			1	μA
Gate-Body Leakage	I_{GSS}	$V_{GS}=\pm 10V, V_{DS}=0V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.6	0.8	1.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=4A$		28	30	m Ω
		$V_{GS}=2.5V, I_D=3A$		35	45	
Forward Transconductance	g_{FS}	$V_{DS}=5V, I_D=4A$		12		S
Input Capacitance	C_{ISS}	$V_{DS}=8V$		802		pF
Output Capacitance	C_{OSS}	$V_{GS}=0V$		153		
Reverse Transfer Capacitance	C_{RSS}	$f=1.0\text{MHz}$		122		
Turn-On Delay Time	$t_{D(on)}$	$V_D=10V,$ $I_D=1A,$ $V_{GEN}=4.5V,$ $R_{GEN}=10\Omega,$ $R_L=10\Omega$		18		ns
Rise Time	t_r			5		
Turn-Off Delay Time	$t_{D(off)}$			43.8		
Fall Time	t_f			20		
Total Gate Charge	Q_g	$V_{DS}=10V,$ $I_D=4A,$ $V_{GS}=4.5V$		10.5		nC
Gate-Source Charge	Q_{gs}			2		
Gate-Drain Charge	Q_{gd}			2.5		
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_D=2A$		0.82	1.2	V

Notes :

- Surface Mounted on FR4 Board, $t \leq 10$ sec.
- Pulse Test : Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
- Guaranteed by design, not subject to production testing.

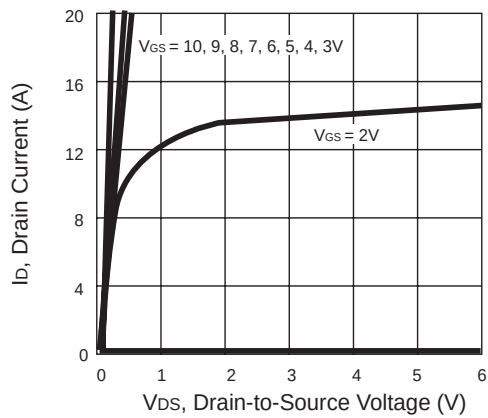


Figure 1. Output Characteristics

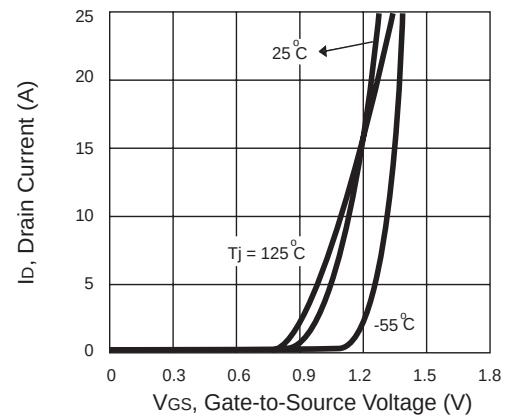


Figure 2. Transfer Characteristics

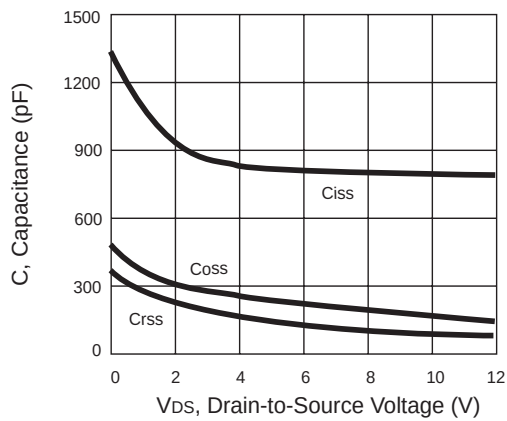


Figure 3. Capacitance

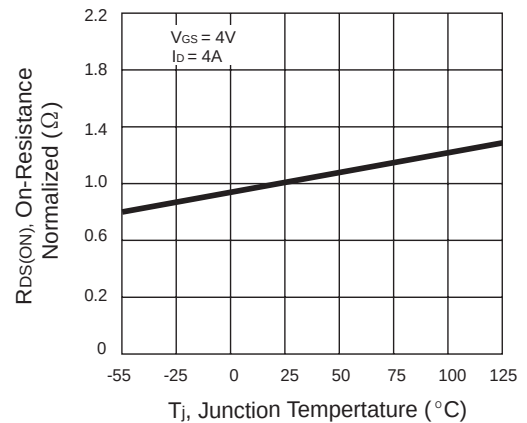


Figure 4. On-Resistance Variation with Temperature

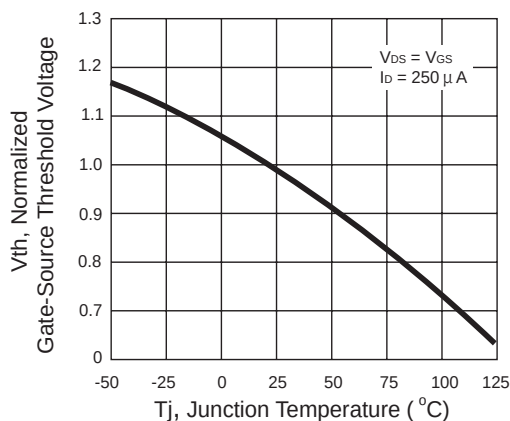


Figure 5. Gate Threshold Variation with Temperature

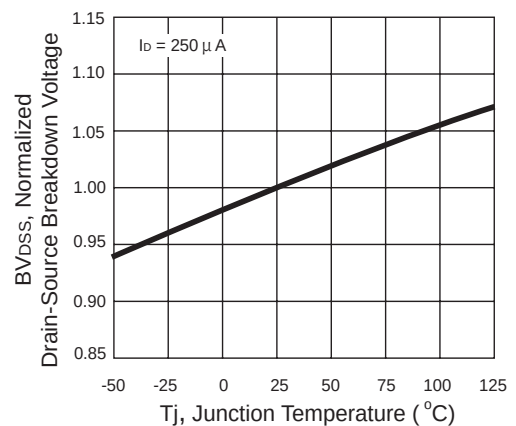


Figure 6. Breakdown Voltage Variation with Temperature

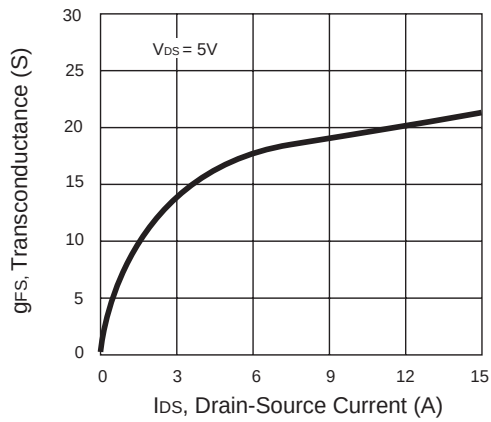


Figure 7. Transconductance Variation with Drain Current

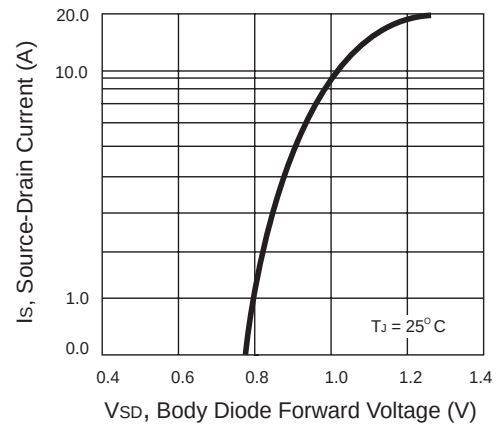


Figure 8. Body Diode Forward Voltage Variation with Source Current

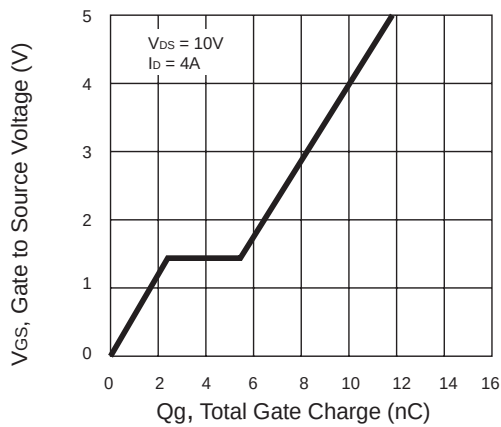


Figure 9. Gate Charge

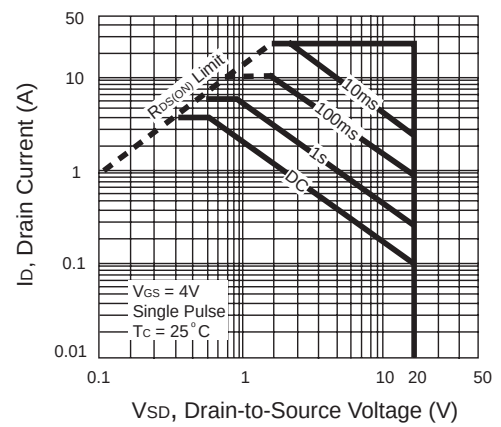


Figure 10. Maximum Safe Operating Area

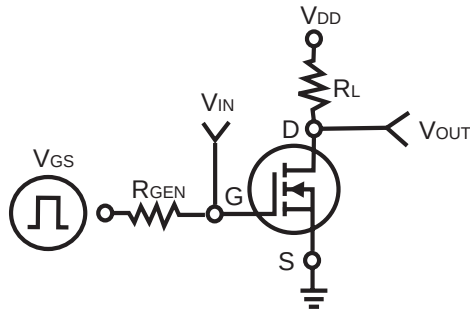


Figure 11. Switching Test Circuit

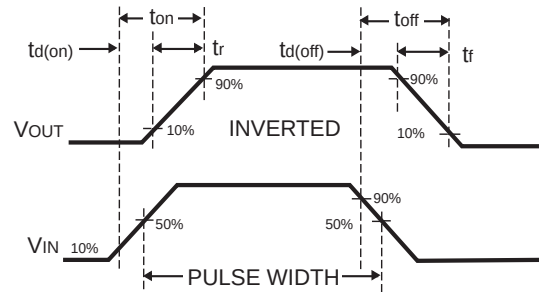


Figure 12. Switching Waveforms

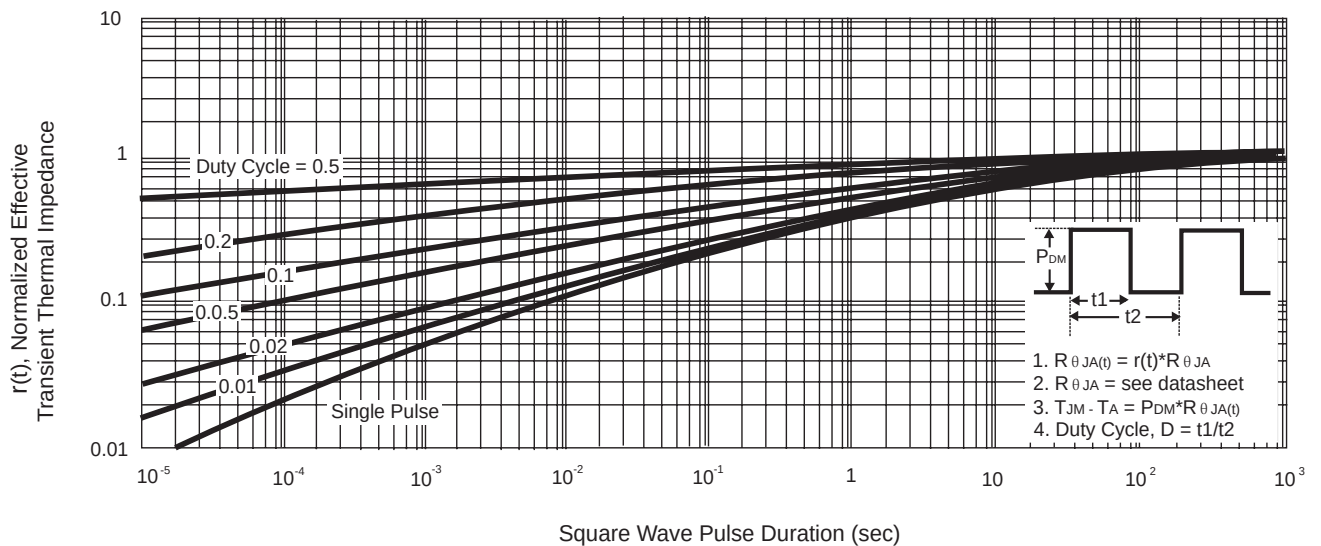
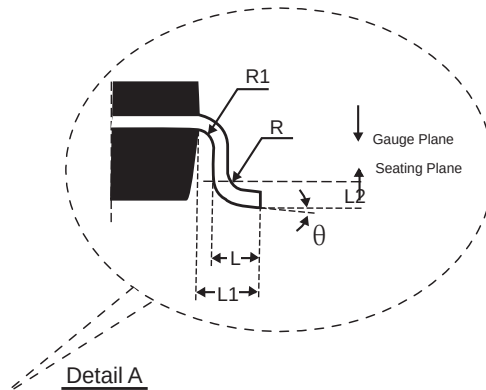
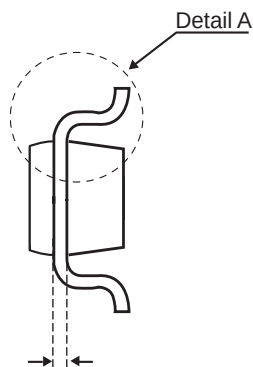
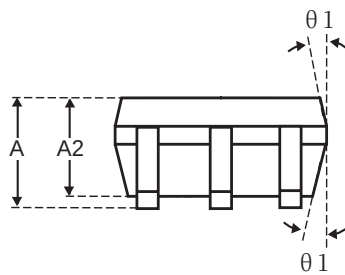
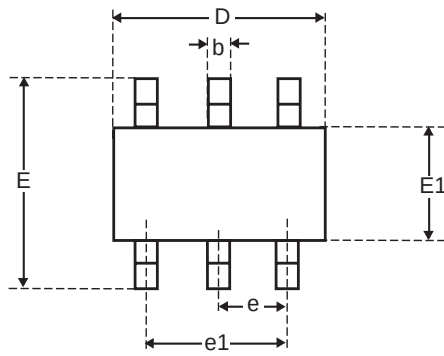


Figure 13. Normalized Thermal Transient Impedance Curve



Package Outline Dimensions

TSOP-6

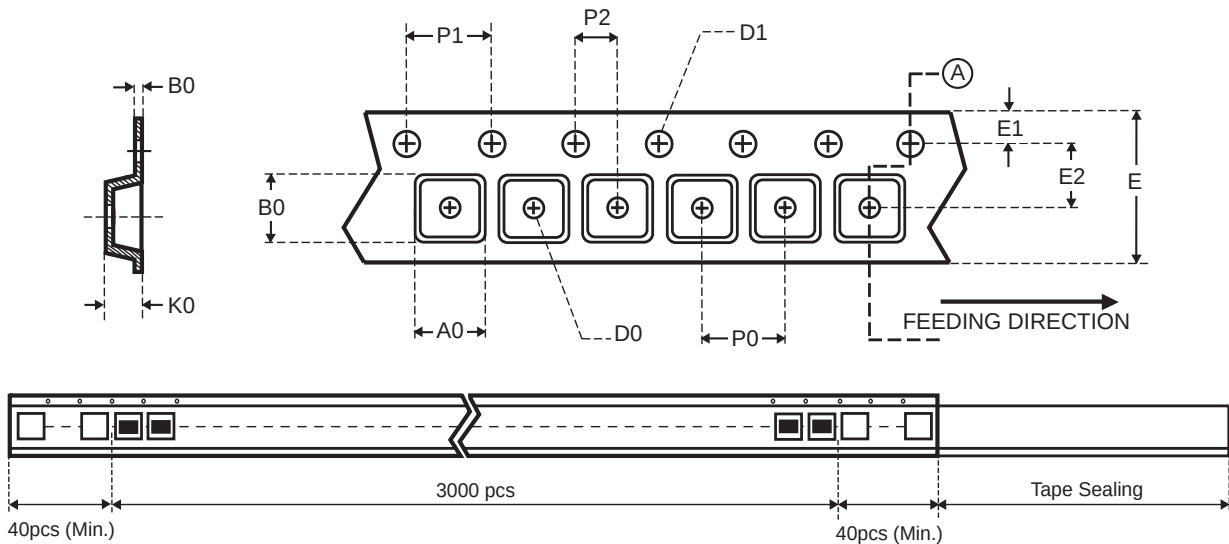


SYMBOLS	MILLIMETERS		
	Min.	Nom.	Max.
A	-	-	1.45
A2	0.90	0.15	1.30
b	0.30	-	0.50
c	0.08	-	0.22
D	2.70	2.90	3.10
E	2.50	2.80	3.10
E1	1.50	1.60	1.70
e	0.95 BSC		
e1	1.90 BSC		
L	0.30	0.45	0.60
L1	0.60 BSC		
L2	0.20 BSC		
R	0.10	-	-
R1	0.10	-	0.25
θ	0°	4°	8°
θ1	0°	10°	15°



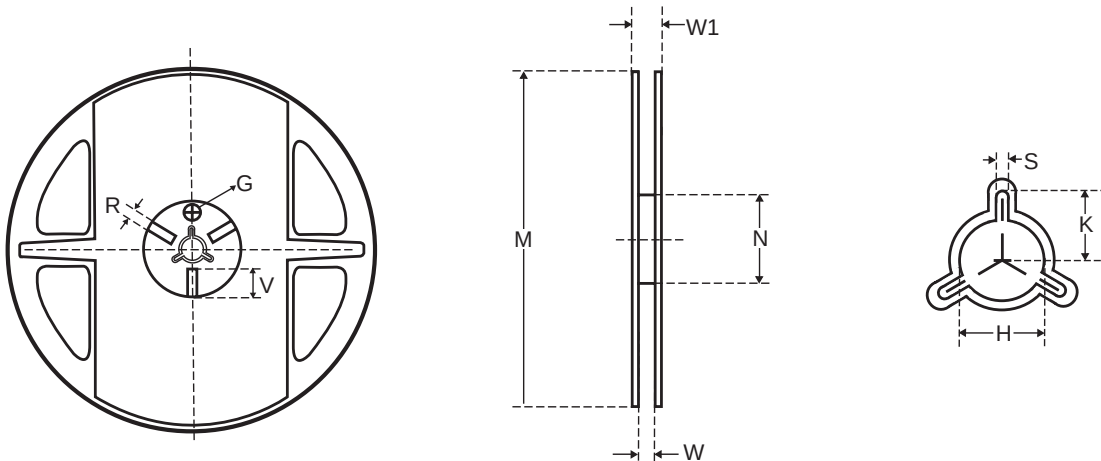
Carrier Tape & Reel Dimensions

TSOP-6



	A0	B0	K0	D0	D1	E	E1	E2	P0	P1	P2	
TSOP-6	3.15	3.20	1.40	$\psi 1.50$ $+0.10$ -0.00	$\psi 1.50$ $+0.10$ -0.00	8.00 ± 0.30	1.75	3.50 ± 0.05	4.00	4.00	2.00 ± 0.05	0.20 ± 0.03

UNIT : mm



Tape size	Reel Size	M	N	W	W1	H	K	S	G	R	V
8mm	$\psi 178$	$\psi 178$ ± 1	$\psi 60$ ± 1	8.4 ± 0.5	11.4 -0.5	$\psi 13.5$ ± 0.5	10.5	2.0 ± 0.5	$\psi 10.0$	5.0	18.0

UNIT : mm