



South Sea Semiconductor

SSD4030N

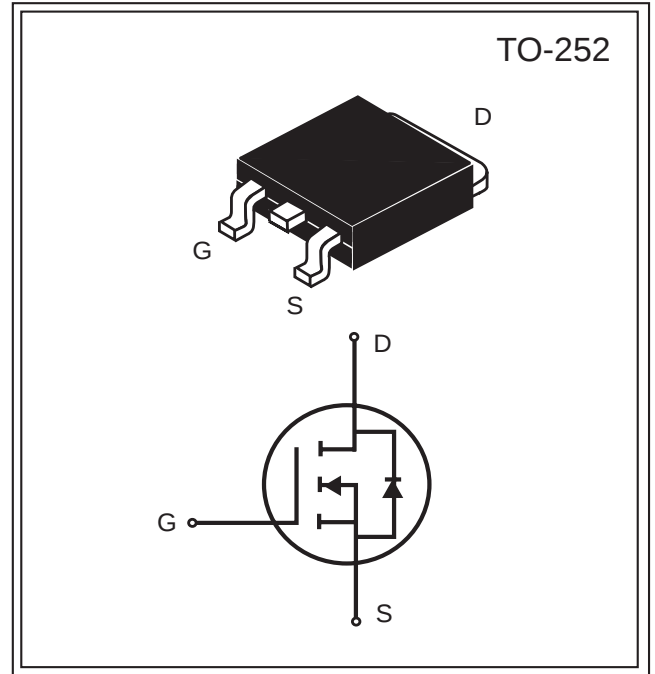
N-Channel Enhancement Mode MOSFET

Product Summary

V _{DS} (V)	I _D (A)	R _{DS(ON)} (mΩ) Max
30V	40A	13 @V _{GS} = 10V
		28 @V _{GS} = 4.5V

FEATURES

- Super high dense cell design for low R_{DS(ON)}.
- Rugged and reliable.
- TO-252 package.



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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V _{DS}	30	V
Gate-Source Voltage	V _{GS}	±20	V
Drain Current-Continuous @ T _C = 25°C	I _D	40	A
-Pulsed ^b	I _{DM}	75	A
Drain-Source Diode Forward Current ^a	I _S	20	A
Maximum Power Dissipation ^a @T _C = 25°C	P _D	50	W
Operating Junction and Storage Temperature Range	T _J , T _{STG}	-55 to 175	°C

THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Case	R _{θJC}	3	°C/W
Thermal Resistance, Junction-to-Ambient ^a	R _{θJA}	50	

South Sea Semiconductor reserves the right to make changes to improve reliability or manufacturability without advance notice.

South Sea Semiconductor, November 2005 (Rev 2.0)



Electrical Characteristics (T _A = 25 °C unless otherwise noted)						
Parameter	Symbol	Condition	Min	Typ ^c	Max	Unit
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250 μ A	30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =24V, V _{GS} =0V			1	μ A
Gate-Body Leakage	I _{GSS}	V _{GS} = ± 20V, V _{DS} =0V			± 100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} I _D =250 μ A	1	1.7	2.5	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =20A		10	13	mΩ
		V _{GS} =4.5V, I _D =10A		22	28	
On-State Drain Current	I _{D(ON)}	V _{DS} =10V, V _{GS} =10V	40			A
Forward Transconductance	g _{FS}	V _{DS} =10V, I _D =15A		11		S
Input Capacitance	C _{ISS}	V _{DS} =15V		1000		pF
Output Capacitance	C _{OSS}	V _{GS} =0V		195		
Reverse Transfer Capacitance	C _{RSS}	f=1.0MHz		135		
Turn-On Delay Time	t _{D(ON)}	V _{DD} =15V,		25		ns
Rise Time	t _r	I _D =1A,		20		
Turn-Off Delay Time	t _{D(OFF)}	V _{GS} =10V,		28		
Fall Time	t _f	R _{GEN} =6Ω		19		
Total Gate Charge	Q _g	V _{DS} =15V, I _D =20A, V _{GS} =10V		23		nC
		V _{DS} =15V, I _D =20A, V _{GS} =4.5V		11		
Gate-Source Charge	Q _{gs}	V _{DD} =15V, I _D =20A,		2.5		
Gate-Drain Charge	Q _{gd}	R _L =15Ω		5		
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _D =20A		0.95	1.2	V

Notes :

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

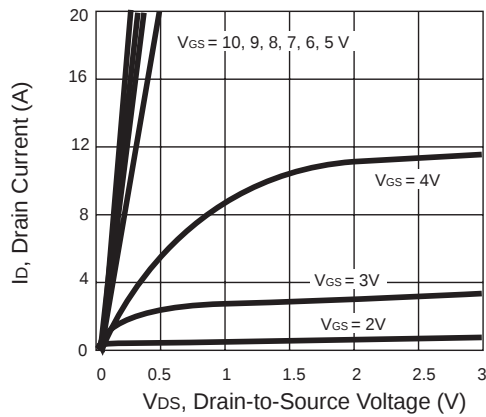


Figure 1. Output Characteristics

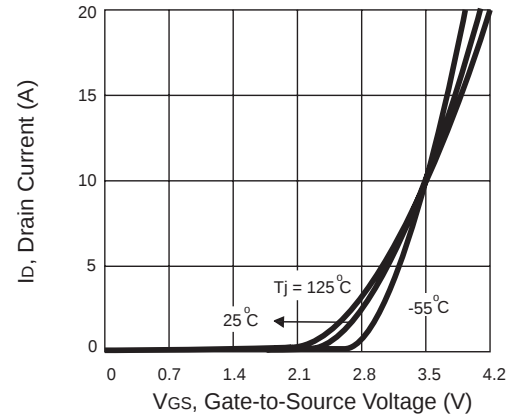


Figure 2. Transfer Characteristics

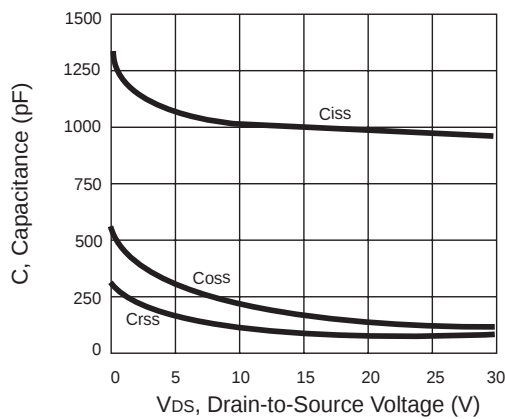


Figure 3. Capacitance

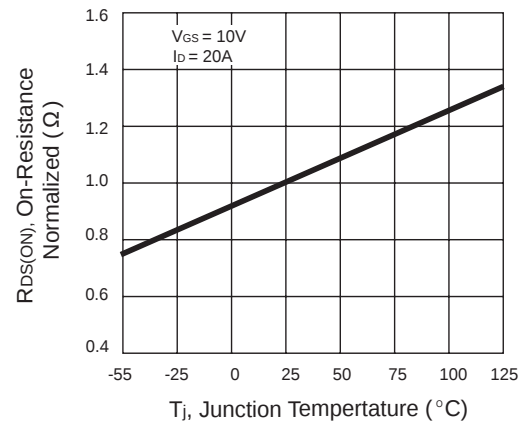


Figure 4. On-Resistance Variation with Temperature

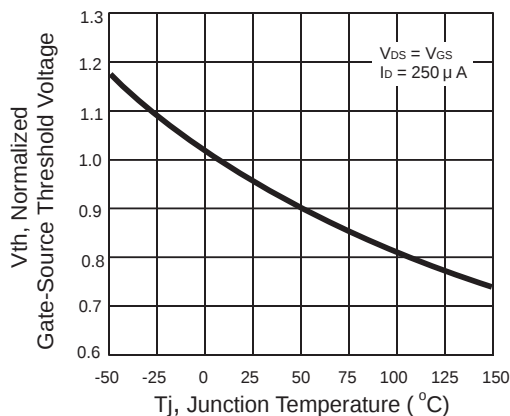


Figure 5. Gate Threshold Variation with Temperature

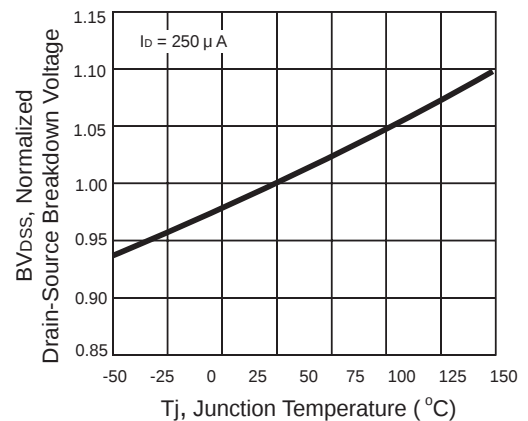


Figure 6. Breakdown Voltage Variation with Temperature

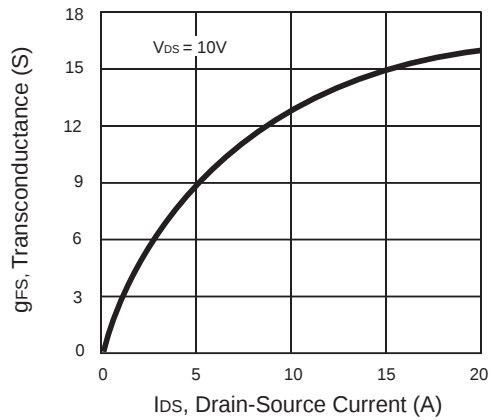


Figure 7. Transconductance Variation with Drain Current

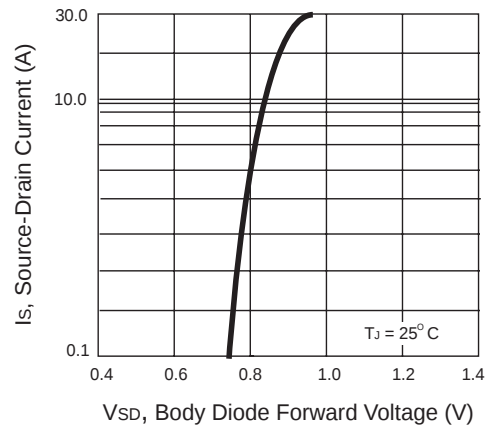


Figure 8. Body Diode Forward Voltage Variation with Source Current

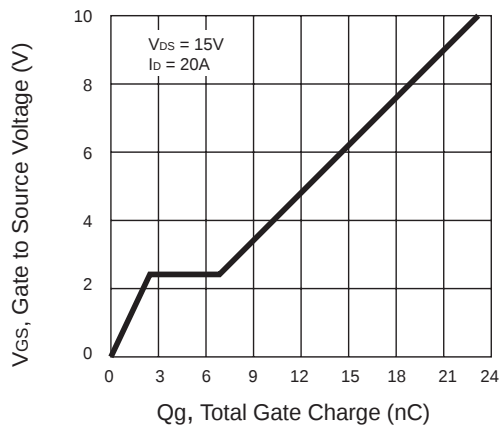


Figure 9. Gate Charge

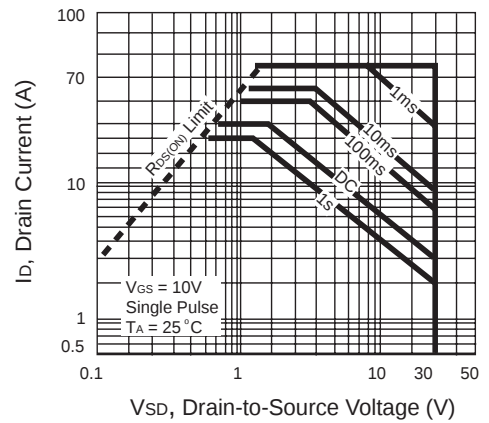


Figure 10. Maximum Safe Operating Area

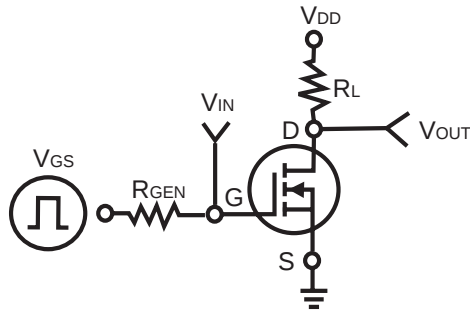


Figure 11. Switching Test Circuit

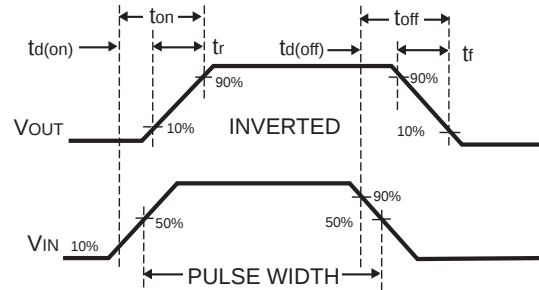


Figure 12. Switching Waveforms

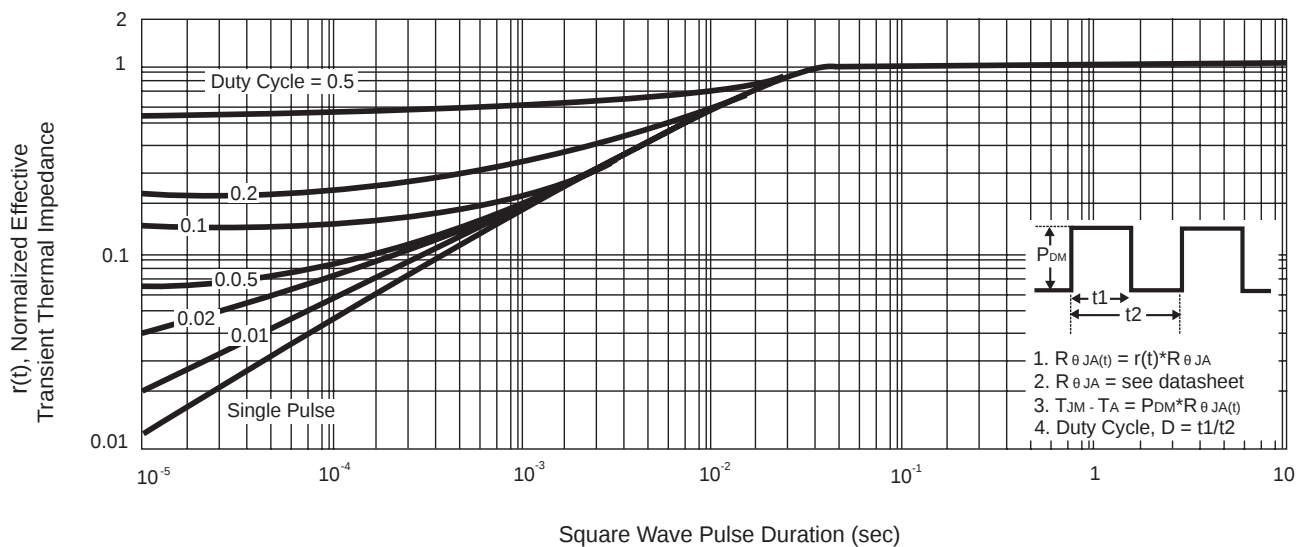
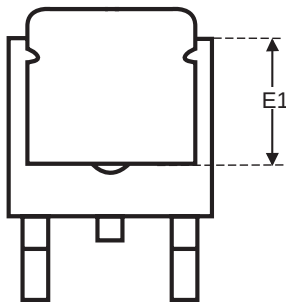
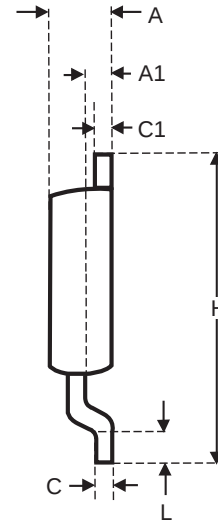
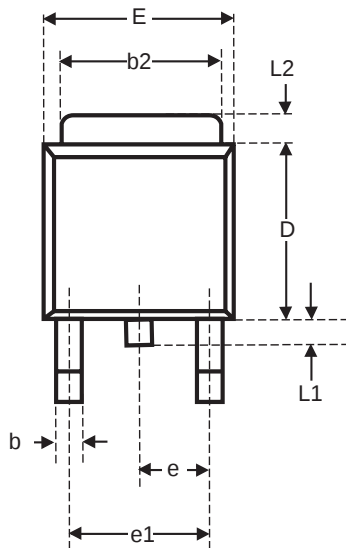


Figure 13. Normalized Thermal Transient Impedance Curve



Package Outline Dimensions

TO-252

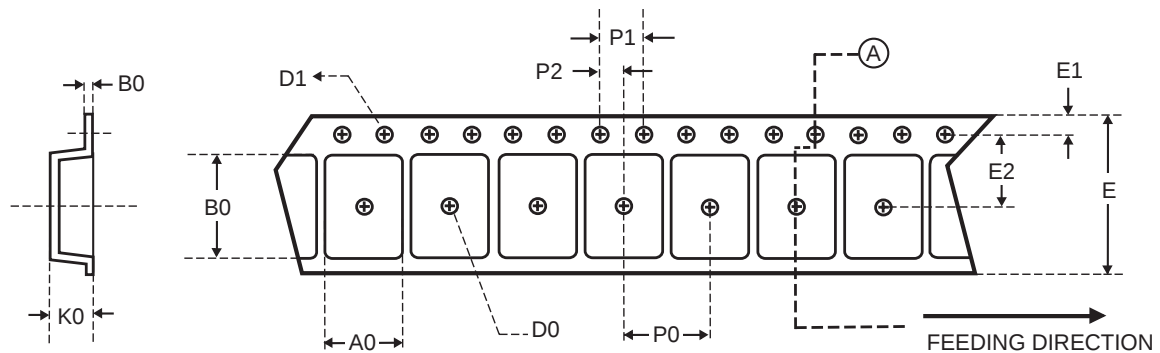


SYMBOLS	MILLIMETERS		INCHES	
	Min.	Max.	Min.	Max.
A	2.25	2.35	0.089	0.093
A1	0.95	1.05	0.037	0.041
b	0.77	0.85	0.030	0.033
b2	5.30	5.45	0.209	0.215
C	0.49	0.53	0.019	0.021
D	6.00	6.20	0.236	0.244
E	6.40	6.60	0.252	0.260
E1	3.18	3.67	0.125	0.145
e	2.29 BSC		0.090 BSC	
H	9.70	10.10	0.382	0.398
L	1.425	1.625	0.056	0.064
L1	0.650	0.850	0.026	0.033
L2	0.600 REF.		0.024 REF.	



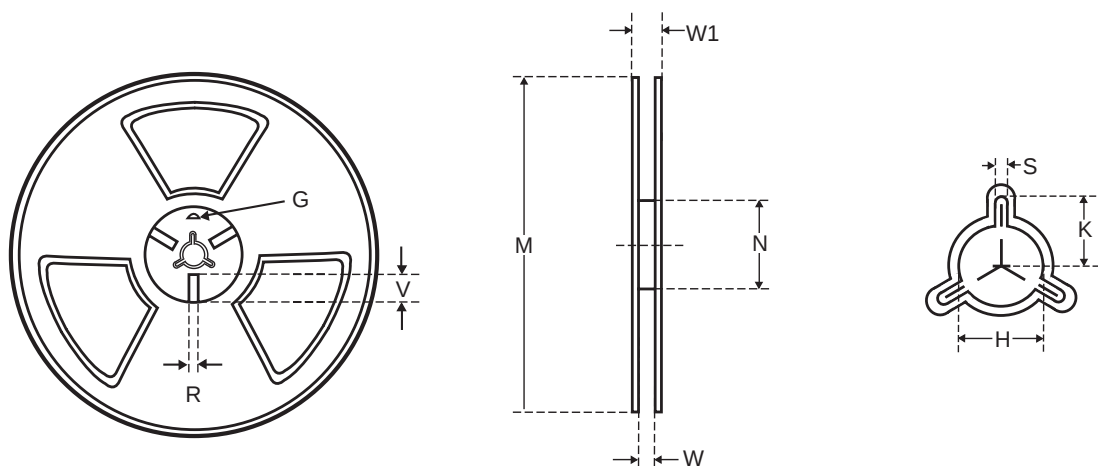
Carrier Tape & Reel Dimensions

TO-252



Package	A0	B0	K0	D0	D1	E	E1	E2	P0	P1	P2	T
TO-252	6.80 ± 0.10	10.30 ± 0.10	2.50 ± 0.10	ψ2.00	ψ1.50 +0.10 -0.00	16.00 ± 0.30	1.75 ± 0.10	7.50 ± 0.15	8.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.15	0.30 ± 0.05

UNIT : mm



Tape size	Reel Size	M	N	W	W1	H	K	S	G	R	V
16 mm	ψ 330	ψ330 ± 0.5	ψ 97 ± 1	17.0 +1.5 -0.0	21.4 +1.5 -0.0	ψ 13.0 +0.5 -0.2	10.6	2.0 ± 0.5	-	-	-

UNIT : mm