



South Sea Semiconductor

SSD3055LA

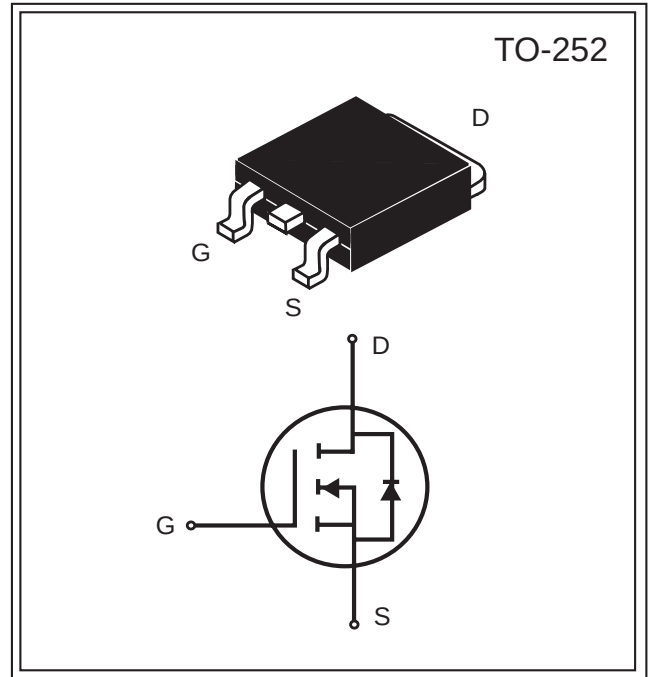
N-Channel Enhancement Mode MOSFET

Product Summary

V_{DS} (V)	I_D (A)	$R_{DS(ON)}$ (m Ω) Max
25V	15A	65 @ $V_{GS} = 10V$
		85 @ $V_{GS} = 4.5V$

FEATURES

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



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	25	V
Gate-Source Voltage	V_{GS}	± 12	V
Drain Current-Continuous @ $T_c = 25^\circ\text{C}$	I_D	15	A
-Pulsed ^b	I_{DM}	45	A
Drain-Source Diode Forward Current ^a	I_S	5	A
Maximum Power Dissipation ^a @ $T_c = 25^\circ\text{C}$	P_D	50	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 175	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	3	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Ambient ^a	$R_{\theta JA}$	50	

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

South Sea Semiconductor, August 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 μA	25			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =20V, V _{GS} =0V			1	μA
Gate-Body Leakage	I _{GSS}	V _{GS} =±12V, V _{DS} =0V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} I _D =250 μA	0.7	1	1.7	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =4A		55	65	mΩ
		V _{GS} =4.5V, I _D =3A		70	85	
On-State Drain Current	I _{D(ON)}	V _{DS} =5V, V _{GS} =4.5V	16			A
Forward Transconductance	g _{FS}	V _{DS} =10V, I _D =5.0A		5		S
Input Capacitance	C _{ISS}	V _{DS} =8V		238	282	pF
Output Capacitance	C _{OSS}	V _{GS} =0V		96	111	
Reverse Transfer Capacitance	C _{RSS}	f=1.0MHz		67	78	
Turn-On Delay Time	t _{D(ON)}	V _{DD} =10V, I _D =1A, V _{GEN} =4.5V, R _{GEN} =6Ω, R _L =10Ω		16.5	20	ns
Rise Time	t _r			18	20	
Turn-Off Delay Time	t _{D(OFF)}			10	11	
Fall Time	t _f			23	25	
Total Gate Charge	Q _g	V _{DS} =15V, I _D =14A, V _{GS} =10V		6	6.6	nC
		V _{DS} =15V, I _D =14A, V _{GS} =4.5V		3.1	3.3	
Gate-Source Charge	Q _{gs}	V _{DS} =15V, I _D =14A, V _{GS} =4.5V		1.2	1.5	
Gate-Drain Charge	Q _{gd}			0.7	1	
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _D =2.5A		1		V

Notes :

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

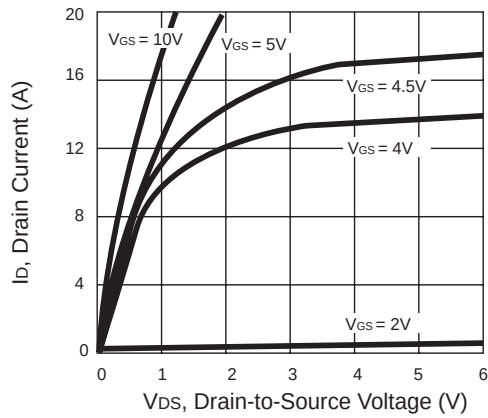


Figure 1. Output Characteristics

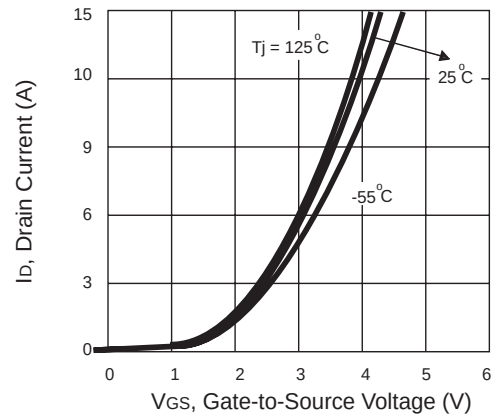


Figure 2. Transfer Characteristics

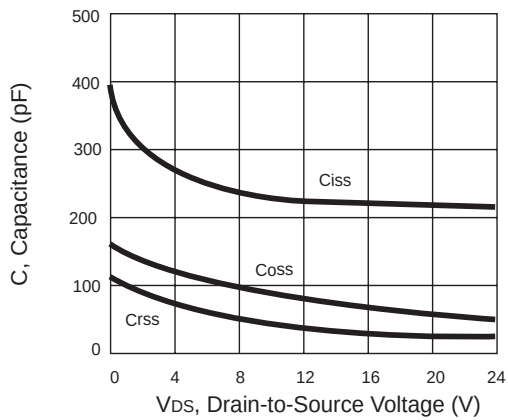


Figure 3. Capacitance

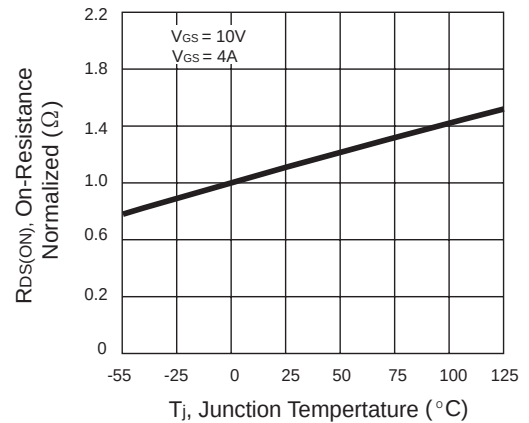


Figure 4. On-Resistance Variation with Temperature

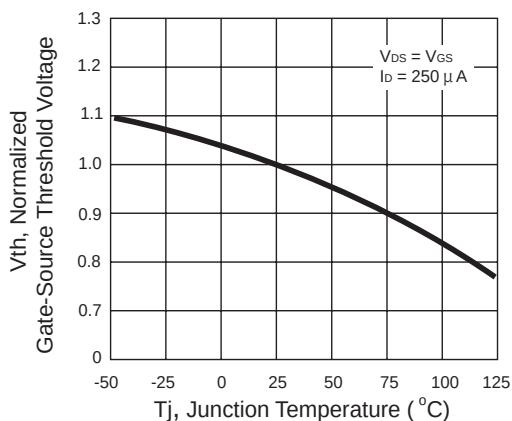


Figure 5. Gate Threshold Variation with Temperature

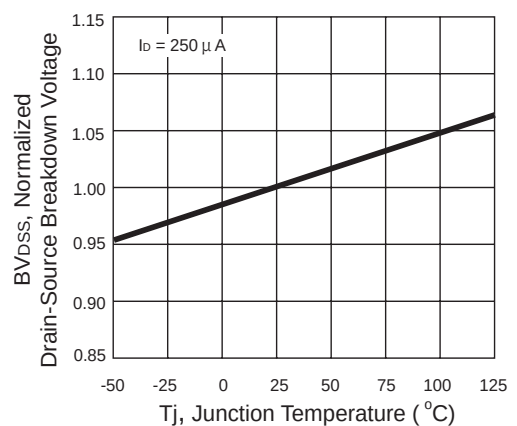


Figure 6. Breakdown Voltage Variation with Temperature

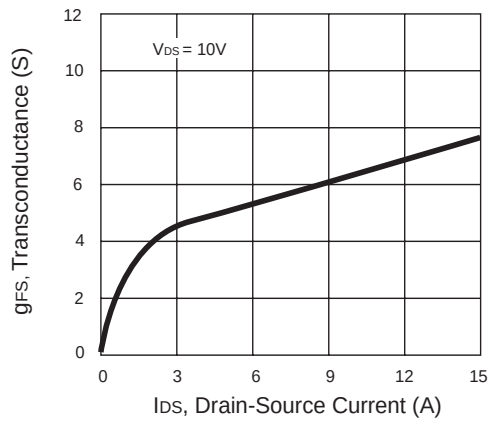


Figure 7. Transconductance Variation with Drain Current

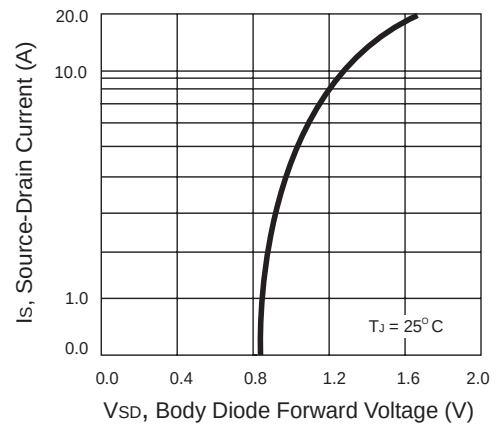


Figure 8. Body Diode Forward Voltage Variation with Source Current

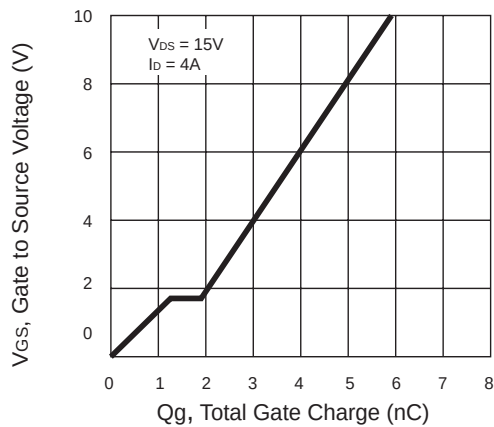


Figure 9. Gate Charge

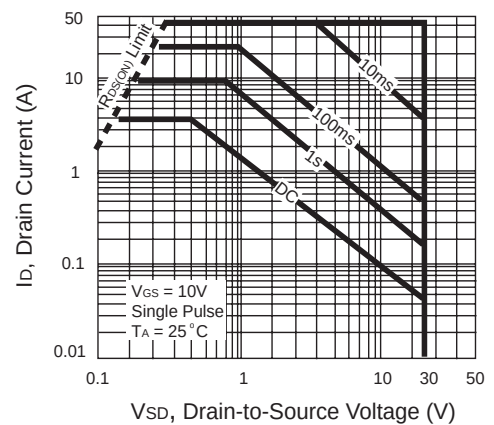


Figure 10. Maximum Safe Operating Area

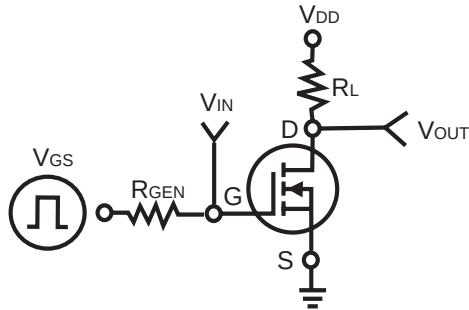


Figure 11. Switching Test Circuit

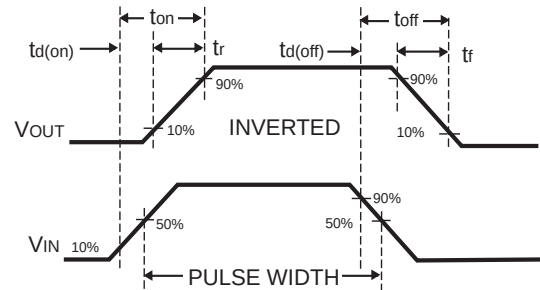


Figure 12. Switching Waveforms

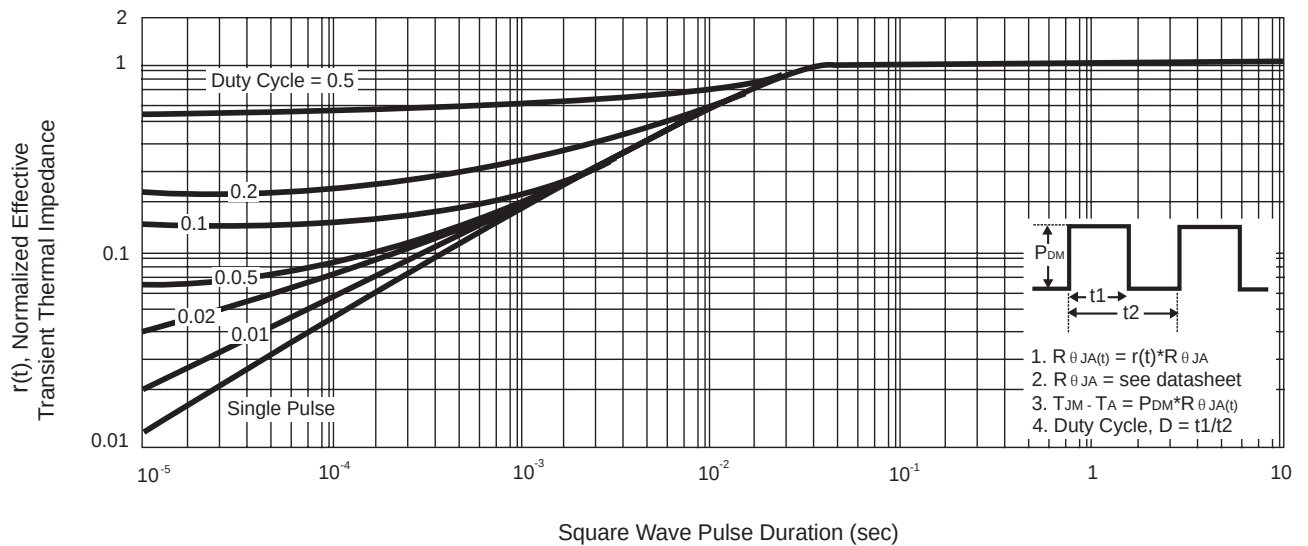
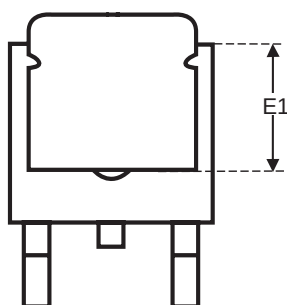
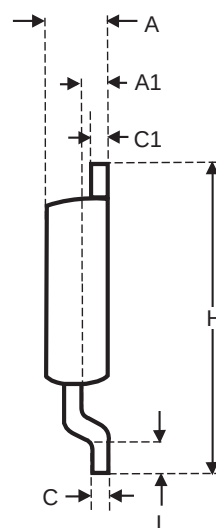
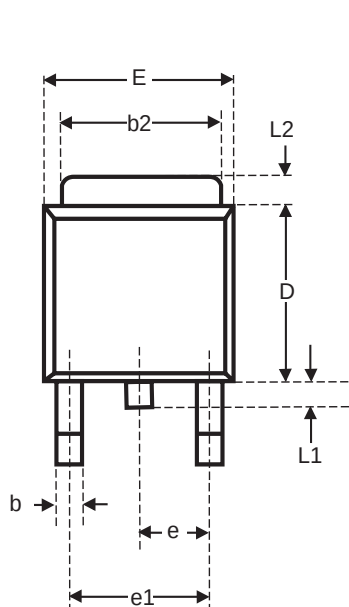


Figure 13. Normalized Thermal Transient Impedance Curve



Package Outline Dimensions

TO-252

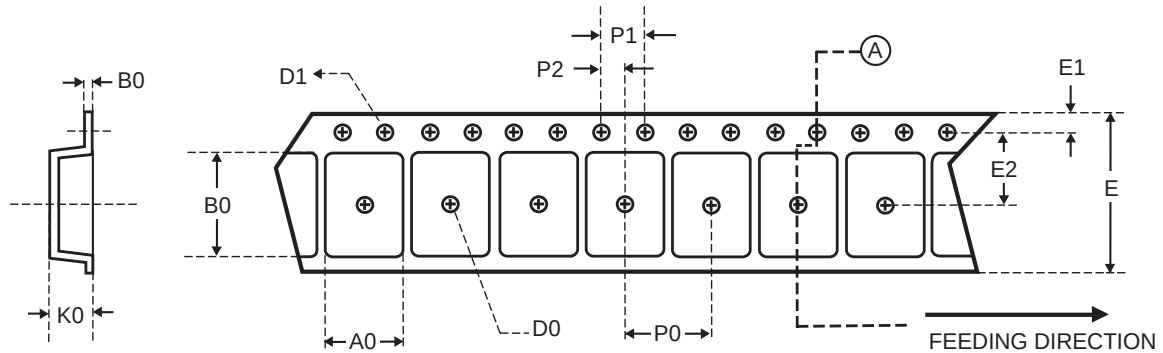


SYMBOLS	MILLIMETERS		INCHES	
	Min.	Max.	Min.	Max.
A	2.25	2.35	0.089	0.093
A1	0.95	1.05	0.037	0.041
b	0.77	0.85	0.030	0.033
b2	5.30	5.45	0.209	0.215
C	0.49	0.53	0.019	0.021
D	6.00	6.20	0.236	0.244
E	6.40	6.60	0.252	0.260
E1	3.18	3.67	0.125	0.145
e	2.29 BSC		0.090 BSC	
H	9.70	10.10	0.382	0.398
L	1.425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



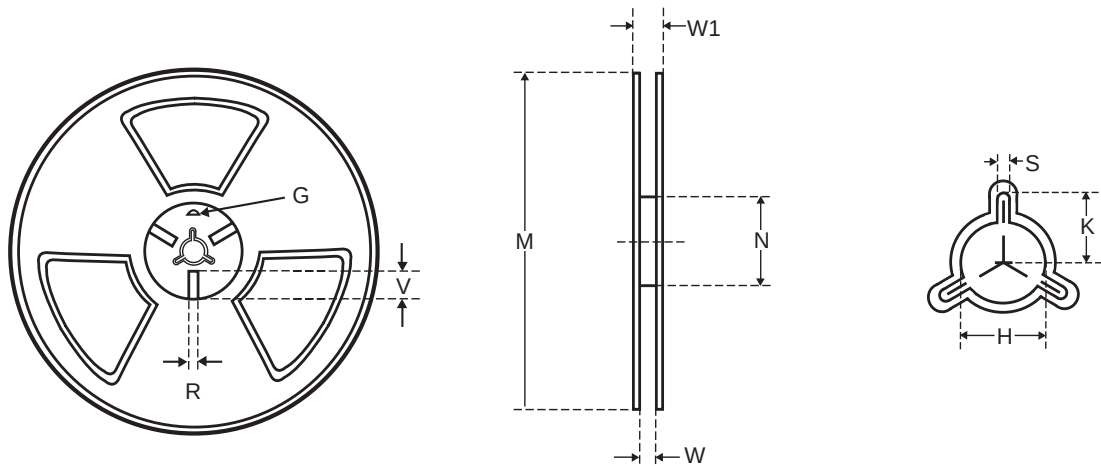
Carrier Tape & Reel Dimensions

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