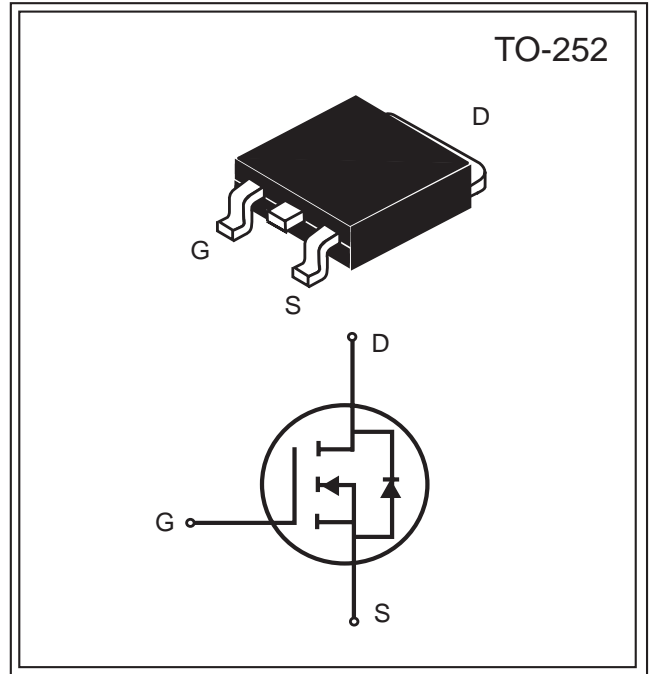




Product Summary		
V <sub>DS</sub> (V)	I <sub>D</sub> (A)	R <sub>DS(ON)</sub> (mΩ) Max
30V	20A	30 @V <sub>GS</sub> = 10V
		55 @V <sub>GS</sub> = 4.5V

### FEATURES

- Super high dense cell design for low R<sub>DS(ON)</sub>.
- Rugged and reliable.
- TO-252 package.



### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V <sub>DS</sub>	30	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Drain Current-Continuous @ T <sub>C</sub> = 25°C	I <sub>D</sub>	20	A
-Pulsed <sup>b</sup>	I <sub>DM</sub>	60	A
Drain-Source Diode Forward Current <sup>a</sup>	I <sub>S</sub>	20	A
Maximum Power Dissipation <sup>a</sup> @T <sub>C</sub> = 25°C	P <sub>D</sub>	50	W
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to 175	°C

### THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Case	R <sub>JC</sub>	3	°C/W
Thermal Resistance, Junction-to-Ambient <sup>a</sup>	R <sub>JA</sub>	50	

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



Electrical Characteristics (T <sub>A</sub> = 25 °C unless otherwise noted)						
Parameter	Symbol	Condition	Min	Typ <sup>c</sup>	Max	Unit
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250 μ A	30			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =24V, V <sub>GS</sub> =0V			1	μ A
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>GS</sub> = ± 20V, V <sub>DS</sub> =0V			± 100	nA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> I <sub>D</sub> =250 μ A	1	1.7	2.5	V
Drain-Source On-State Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =20A		23	30	m
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =10A		47	55	
On-State Drain Current	I <sub>D(ON)</sub>	V <sub>DS</sub> =5V, V <sub>GS</sub> =10V	45			A
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =5V, I <sub>D</sub> =7A		8		S
Input Capacitance	C <sub>ISS</sub>	V <sub>DS</sub> =15V V <sub>GS</sub> =0V f=1.0MHz		590		PF
Output Capacitance	C <sub>OSS</sub>			108		
Reverse Transfer Capacitance	C <sub>RSS</sub>			80		
Turn-On Delay Time	t <sub>D(ON)</sub>	V <sub>DD</sub> =15V, I <sub>D</sub> =1A, V <sub>GS</sub> =10V, R <sub>GEN</sub> =10 Ω		9		ns
Rise Time	t <sub>r</sub>			16		
Turn-Off Delay Time	t <sub>D(OFF)</sub>			17		
Fall Time	t <sub>f</sub>			11		
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =15V, I <sub>D</sub> =1A, V <sub>GS</sub> =10V		13		nC
		V <sub>DS</sub> =15V, I <sub>D</sub> =1A, V <sub>GS</sub> =4.5V		6.5		
Gate-Source Charge	Q <sub>gs</sub>	V <sub>DS</sub> =15V, I <sub>D</sub> =1A, V <sub>GS</sub> =10V		2.5		
Gate-Drain Charge	Q <sub>gd</sub>			3		
Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =20A		1	1.3	V

Notes :

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

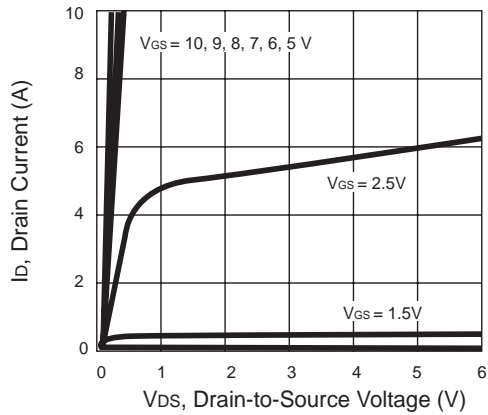


Figure 1. Output Characteristics

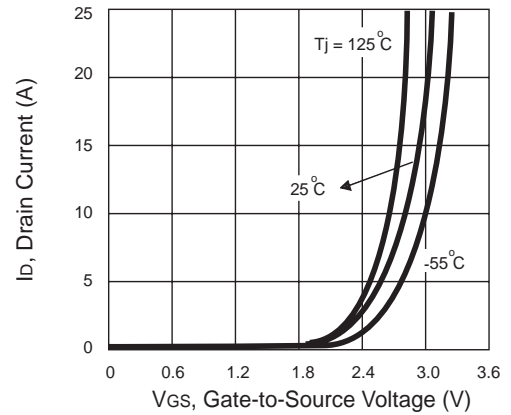


Figure 2. Transfer Characteristics

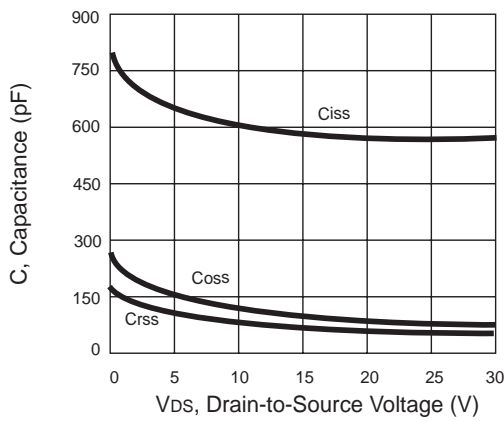


Figure 3. Capacitance

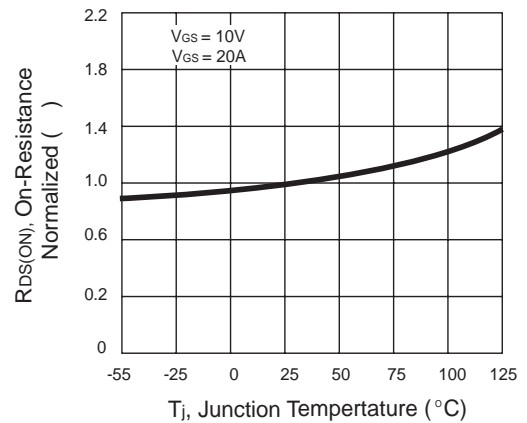


Figure 4. On-Resistance Variation with Temperature

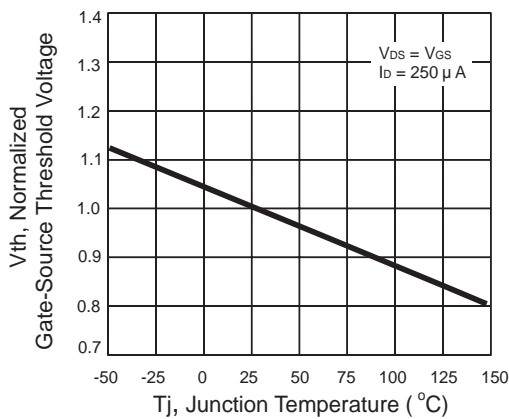


Figure 5. Gate Threshold Variation with Temperature

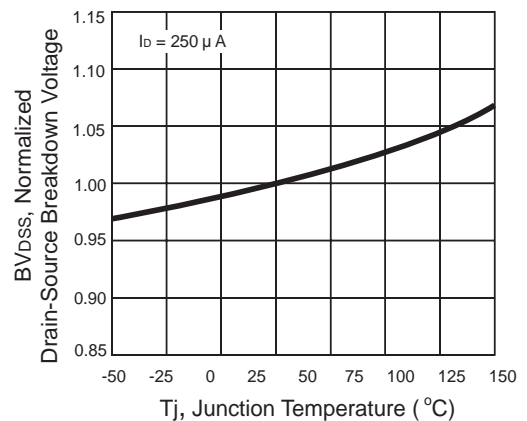
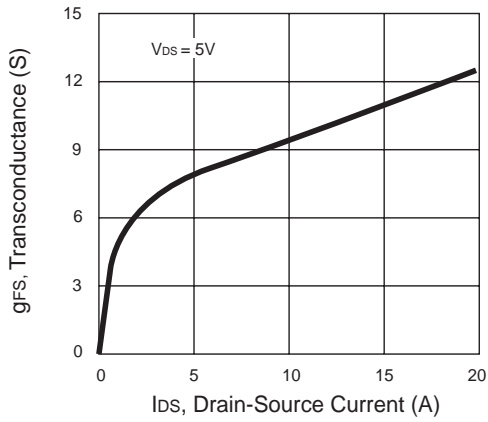
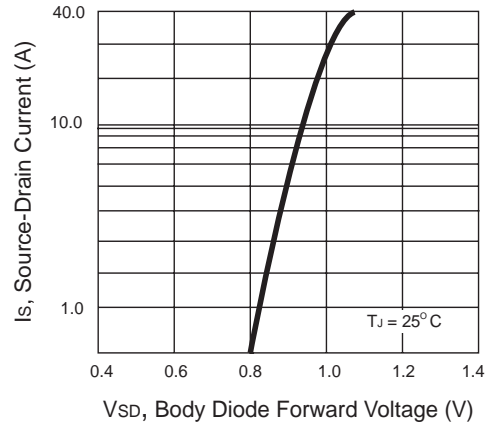


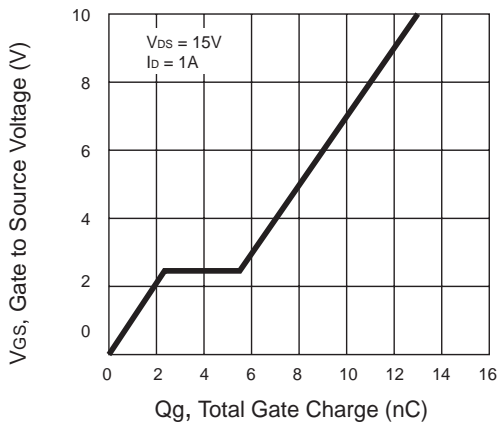
Figure 6. Breakdown Voltage Variation with Temperature



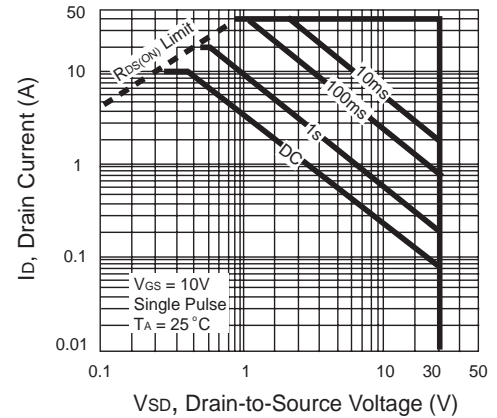
**Figure 7. Transconductance Variation with Drain Current**



**Figure 8. Body Diode Forward Voltage Variation with Source Current**



**Figure 9. Gate Charge**



**Figure 10. Maximum Safe Operating Area**

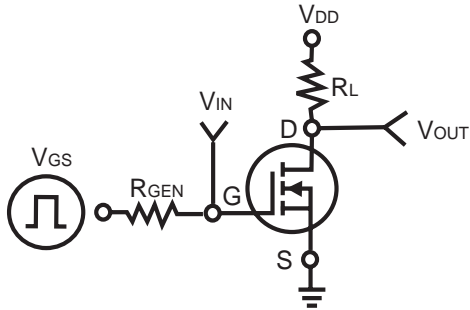


Figure 11. Switching Test Circuit

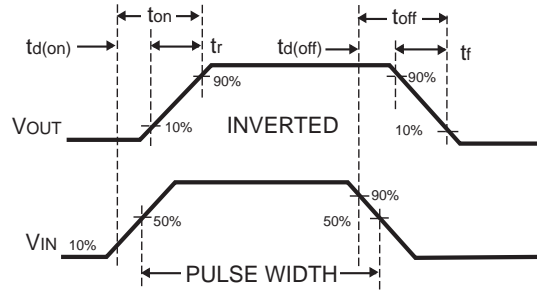


Figure 12. Switching Waveforms

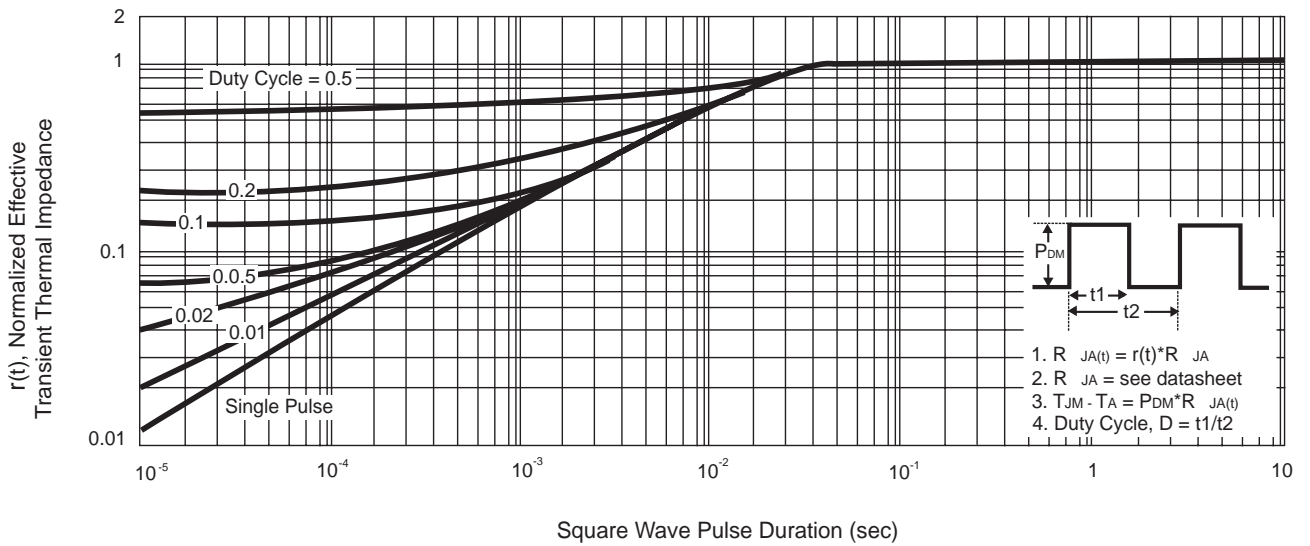
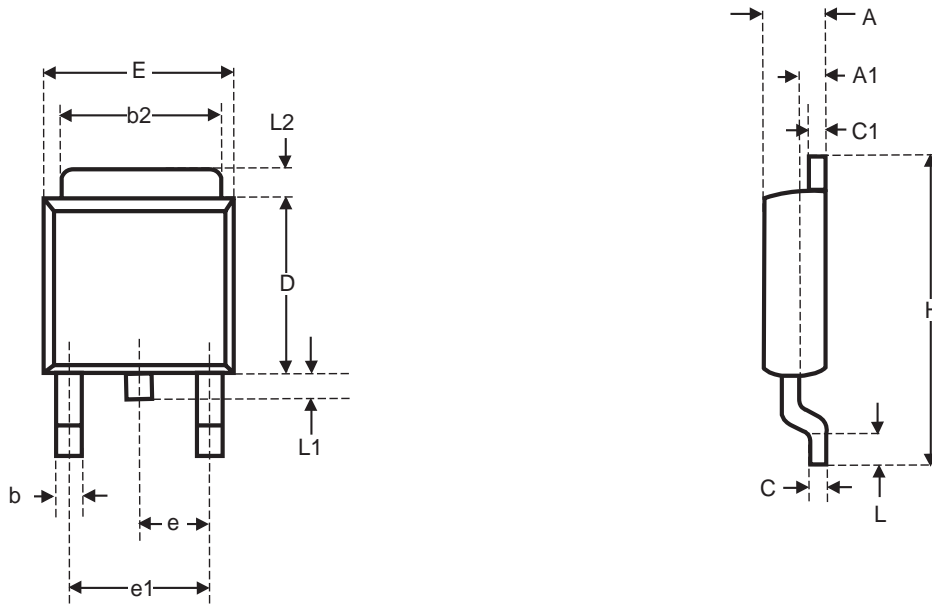


Figure 13. Normalized Thermal Transient Impedance Curve



## Package Outline Dimensions

TO-252

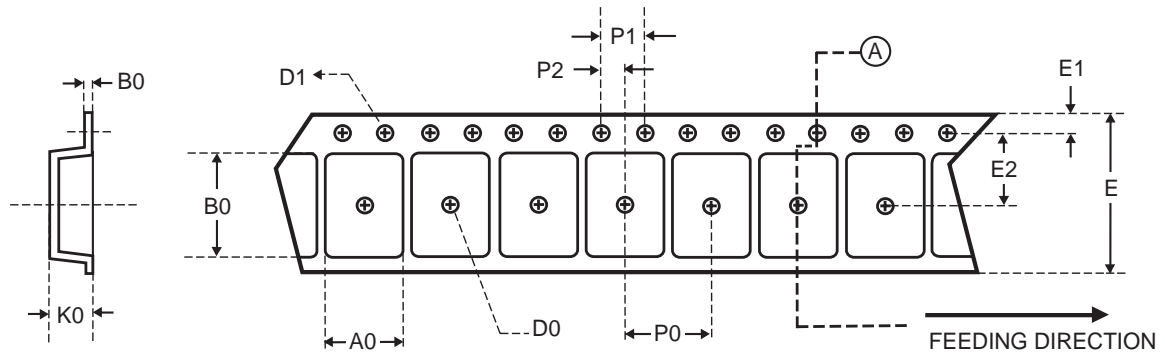


SYMBOLS	MILLIMETERS		INCHES	
	Min.	Max.	Min.	Max.
A	2.25	2.35	0.089	0.093
A1	0.95	1.05	0.037	0.041
b	0.77	0.85	0.030	0.033
b2	5.30	5.45	0.209	0.215
C	0.49	0.53	0.019	0.021
D	6.00	6.20	0.236	0.244
E	6.40	6.60	0.252	0.260
E1	3.18	3.67	0.125	0.145
e	2.29 BSC		0.090 BSC	
H	9.70	10.10	0.382	0.398
L	1.425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



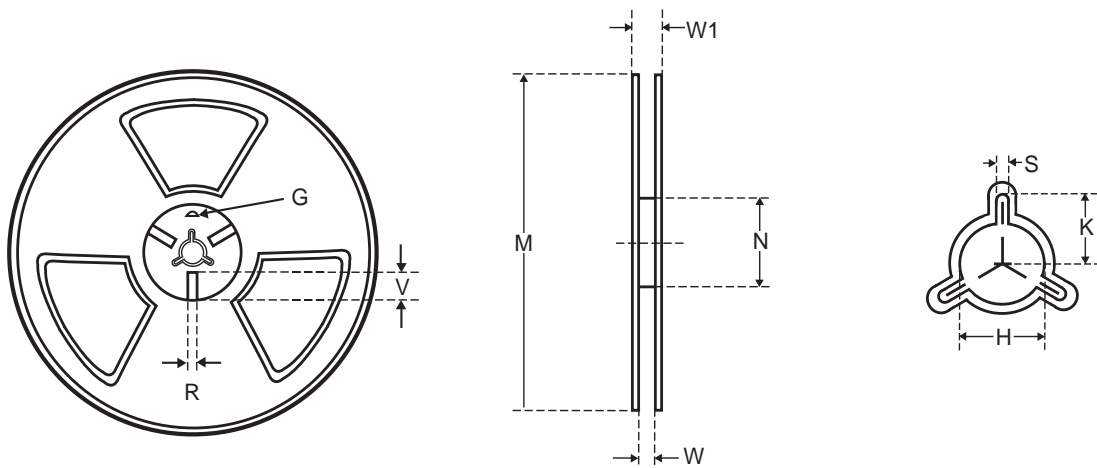
## Carrier Tape & Reel Dimensions

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	2.00	1.50 +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	330	330 ± 0.5	97 ± 1	17.0 +1.5 -0.0	21.4 +1.5 -0.0	13.0 +0.5 -0.2	10.6	2.0 ± 0.5	-	-	-

UNIT : mm