



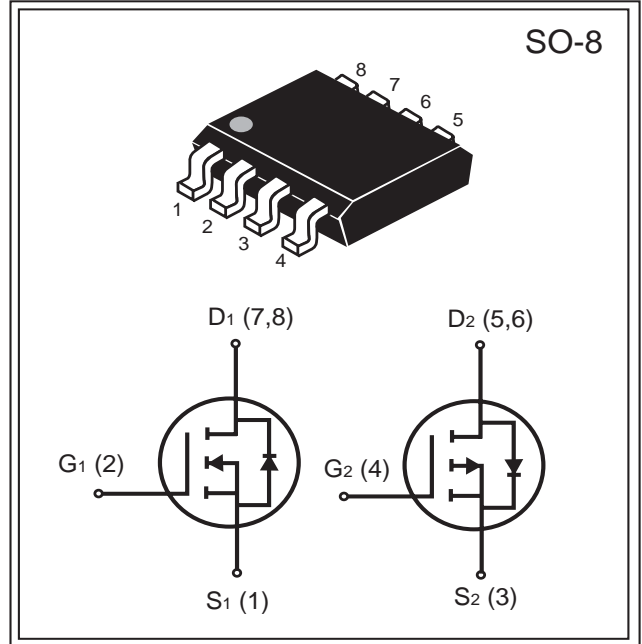
South Sea Semiconductor

SSM8405

Dual Enhancement Mode MOSFET

Product Summary (N-Channel)		
V _{DS} (V)	I _D (A)	R _{DS(ON)} (mΩ) Max
30V	7A	25 @V _{GS} = 10V
		40 @V _{GS} = 4.5V

Product Summary (P-Channel)		
V _{DS} (V)	I _D (A)	R _{DS(ON)} (mΩ) Max
-30V	-5A	45 @V _{GS} = -10V
		60 @V _{GS} = -4.5V



ABSOLUTE MAXIMUM RATINGS (T _A = 25 °C unless otherwise noted)				
Parameter	Symbol	N-Channel Limited	P-Channel Limited	Unit
Drain-Source Voltage	V _{DS}	30	-30	V
Gate-Source Voltage	V _{GS}	±22	±22	
Drain Current-Continuous @ T _a	I _D	25 °C	7	A
		70 °C	6	
-Pulsed ^b	I _{DM}	30	-20	A
Drain-Source Diode Forward Current ^a	I _S	1.6	-1.6	
Maximum Power Dissipation ^a	P _D	T _a =25 °C	2.0	W
		T _a =70 °C	1.44	
Operating Junction and Storage Temperature Range	T _J , T _{STG}	-55 to 150		°C
THERMAL CHARACTERISTICS				
Thermal Resistance, Junction-to-Ambient ^a	R _{JA}	62.5		°C/W

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

South Sea Semiconductor, September 2005 (Rev 2.0)



N-Channel Electrical Characteristics (TA = 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} = ± 22V, V _{DS} =0V			± 100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} I _D =250 μ A	1	1.5	2	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =6.6A		20	25	m
		V _{GS} =4.5V, I _D =5A		35	40	
On-State Drain Current	I _{D(ON)}	V _{DS} =5V, V _{GS} =4.5V	20			A
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =6.6A		10		S
Input Capacitance	C _{ISS}	V _{DS} =15V		766	853	pF
Output Capacitance	C _{OSS}	V _{GS} =0V		142	166	
Reverse Transfer Capacitance	C _{RSS}	f=1.0MHz		98	122	
Turn-On Delay Time	t _{D(ON)}	V _{DD} =15V,		7.5	10	ns
Rise Time	t _r	I _D =6.6A,		27.5	35	
Turn-Off Delay Time	t _{D(OFF)}	V _{GS} =10V,		12	22	
Fall Time	t _f	R _{GEN} =3		7.5	12	
Total Gate Charge	Q _g	V _{DS} =10V, I _D =6.6A, V _{GS} =10V		14	18	nC
		V _{DS} =10V, I _D =6.6A, V _{GS} =4.5V		6	10	
Gate-Source Charge	Q _{gs}	V _{DS} =15V I _D =6.6A,		2.3	4	
Gate-Drain Charge	Q _{gd}	V _{GS} =10V		4	6	
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _D =1.6A		0.8	1.2	V

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P-Channel Electrical Characteristics (TA = 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} = ± 22V, V _{DS} =0V			± 100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} I _D =-250 μ A	-1	-1.5	-2.5	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =-10V, I _D =-5A		35	45	m
		V _{GS} =-4.5V, I _D =-4A		50	60	
On-State Drain Current	I _{D(ON)}	V _{DS} =-5V, V _{GS} =-10V	20			A
Forward Transconductance	g _{FS}	V _{DS} =-5V, I _D =-5A		10		S
Input Capacitance	C _{ISS}	V _{DS} =-15V V _{GS} =0V f=1.0MHz		720	845	pF
Output Capacitance	C _{OSS}			155	185	
Reverse Transfer Capacitance	C _{RSS}			90	125	
Gate Resistance	R _g	V _{GS} =0V, V _{DS} =0V, f=1.0MHz		3.5		
Turn-On Delay Time	t _{D(ON)}	V _{DD} =-15V, V _{GS} =-10V, R _{GEN} =3 , R _L =2.7		4.5	14	ns
Rise Time	t _r			8	30	
Turn-Off Delay Time	t _{D(OFF)}			47	75	
Fall Time	t _f			22.5	35	
Total Gate Charge	Q _g	V _{DS} =-15V, I _D =-5A, V _{GS} =-10V		14	16	nC
		V _{DS} =-15V, I _D =-5A, V _{GS} =-4.5V		7	10	
Gate-Source Charge	Q _{gs}	V _{DS} =-15V, I _D =-5A, V _{GS} =-10V		1.5	2.8	
Gate-Drain Charge	Q _{gd}			4.2	6	
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _D =-1.6A		-0.8	-1.2	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.



N-Channel

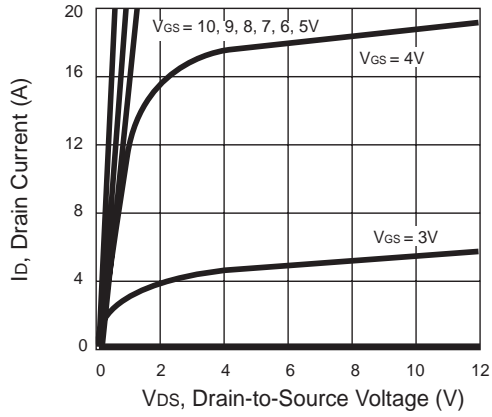


Figure 1. Output Characteristics

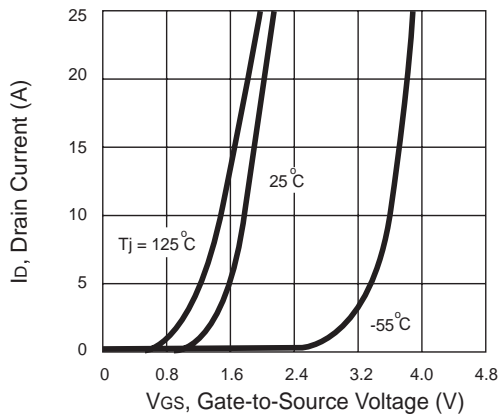


Figure 2. Transfer Characteristics

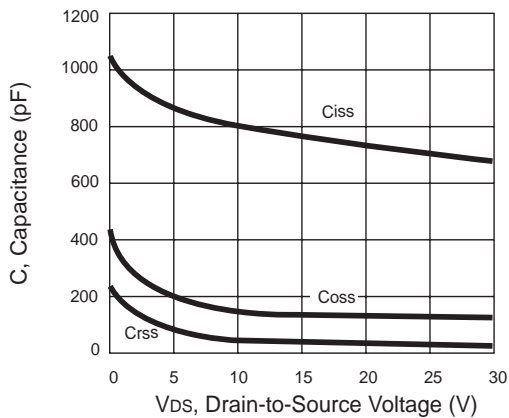


Figure 3. Capacitance

P-Channel

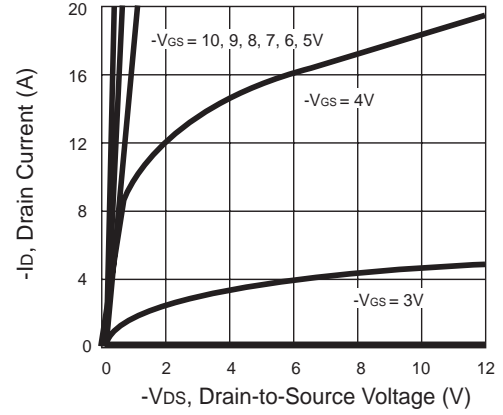


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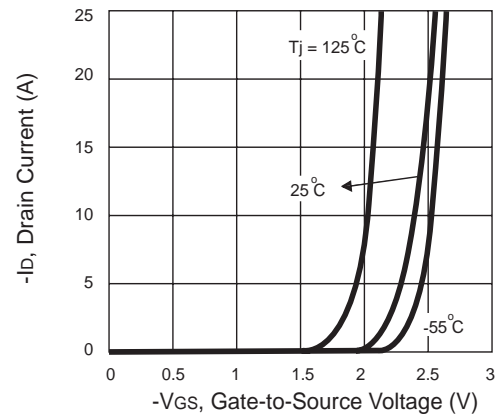


Figure 2. Transfer Characteristics

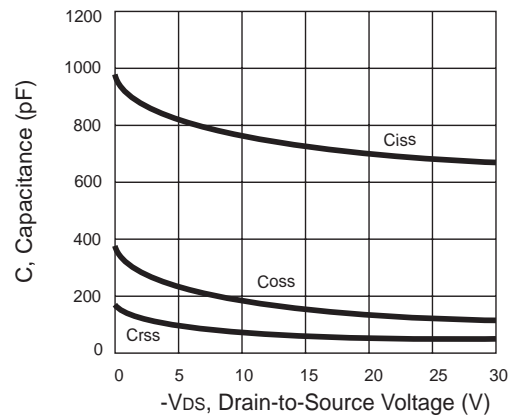


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N-Channel

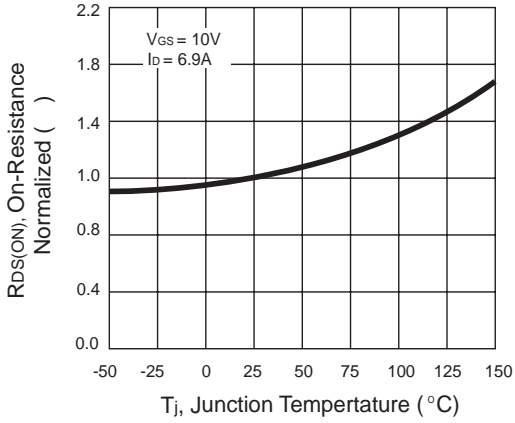


Figure 4. On-Resistance Variation with Temperature

P-Channel

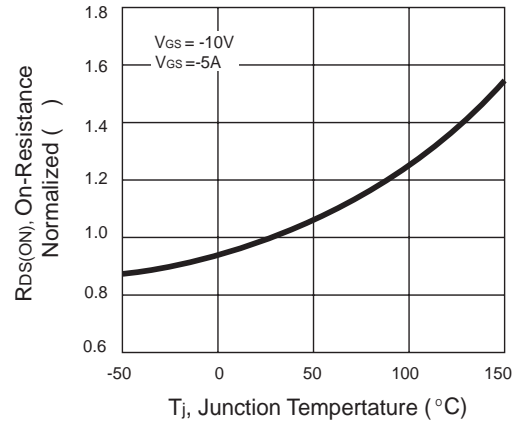


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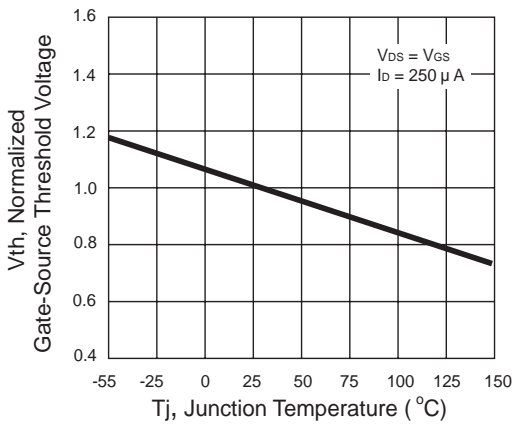


Figure 5. Gate Threshold Variation with Temperature

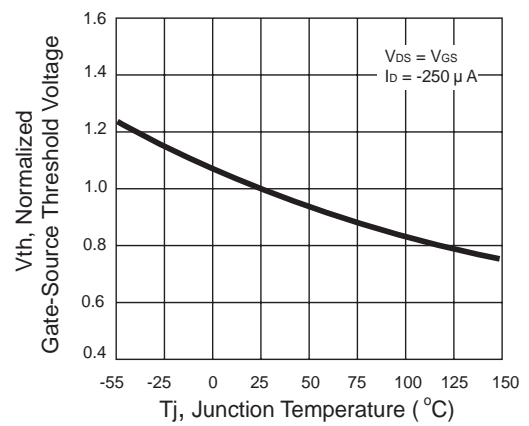


Figure 5. Gate Threshold Variation with Temperature

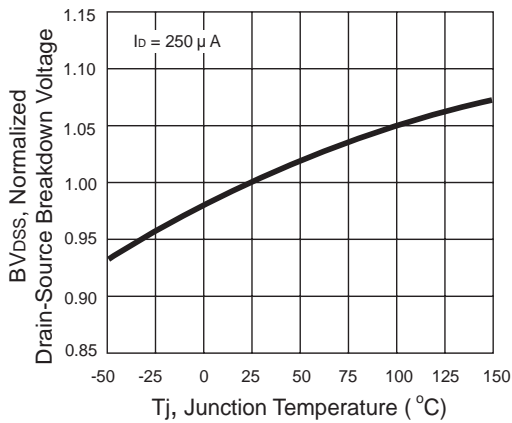


Figure 6. Breakdown Voltage Variation with Temperature

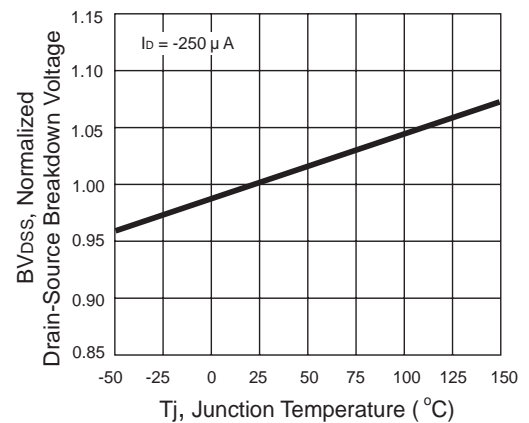


Figure 6. Breakdown Voltage Variation with Temperature



N-Channel

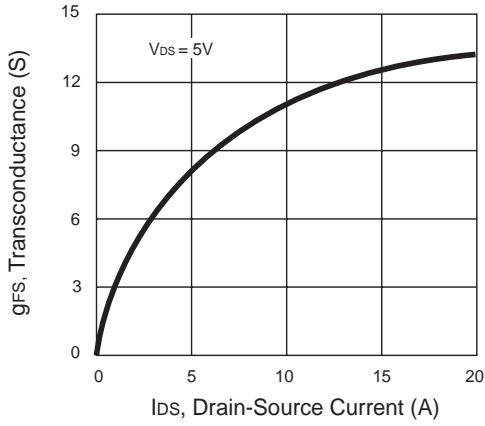


Figure 7. Transconductance Variation with Drain Current

P-Channel

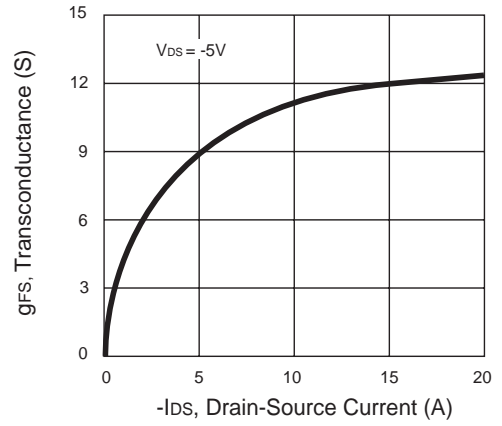


Figure 7. Transconductance Variation with Drain Current

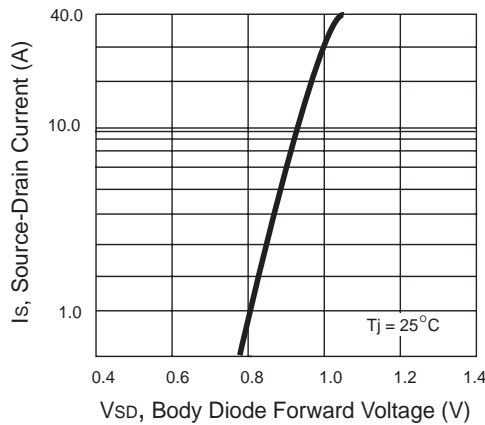


Figure 8. Body Diode Forward Voltage Variation with Source Current

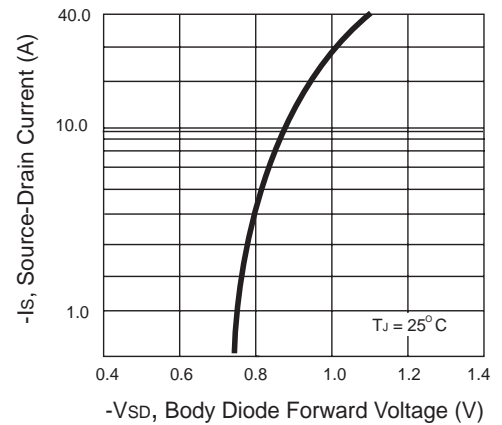


Figure 8. Body Diode Forward Voltage Variation with Source Current

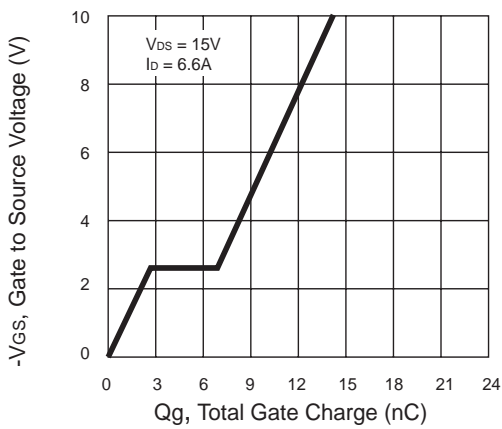


Figure 9. Gate Charge

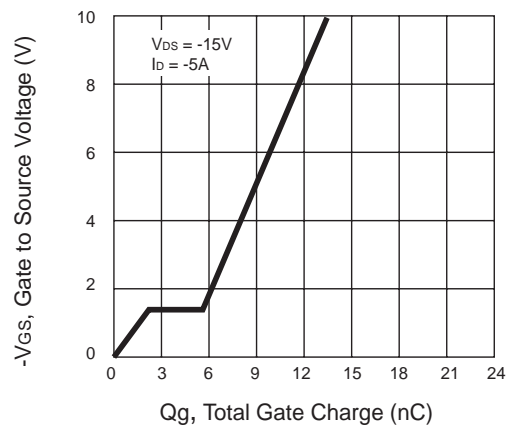


Figure 9. Gate Charge



N-Channel

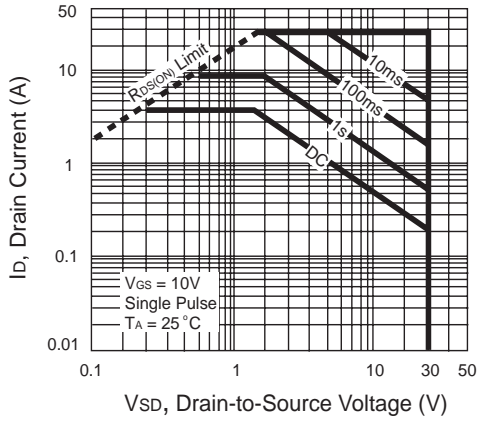


Figure 10. Maximum Safe Operating Area

P-Channel

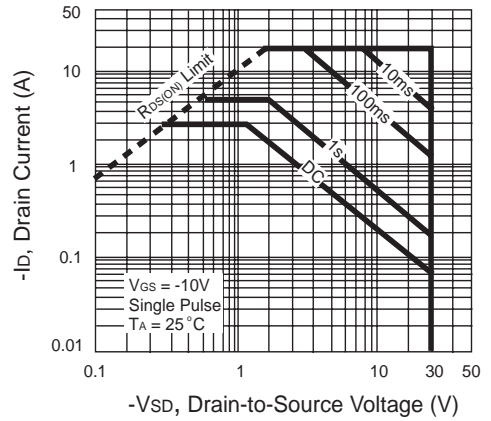


Figure 10. Maximum Safe Operating Area

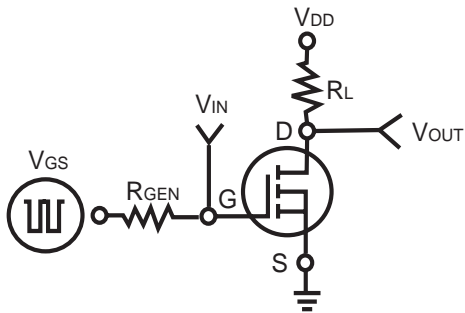


Figure 11. Switching Test Circuit

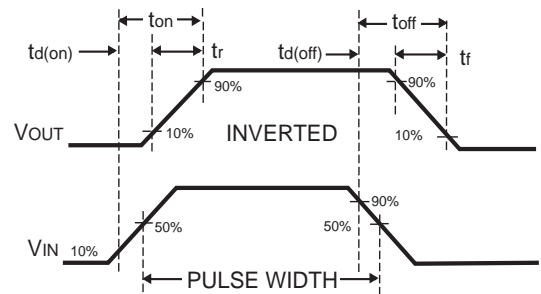


Figure 12. Switching Waveforms



N-Channel

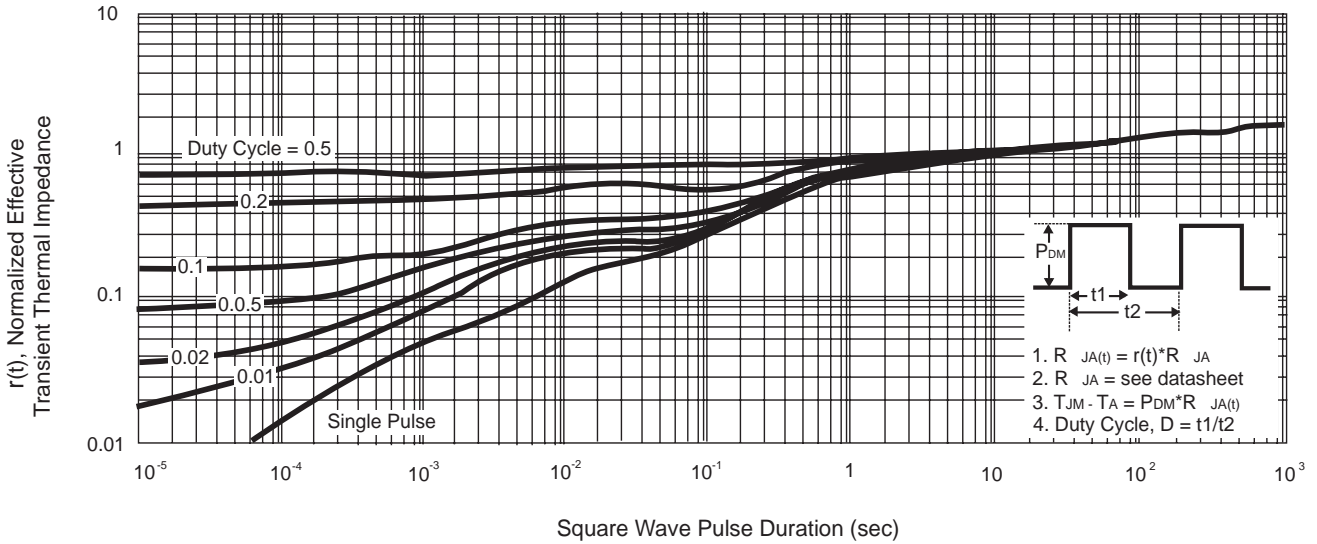


Figure 13. Normalized Thermal Transient Impedance Curve

P-Channel

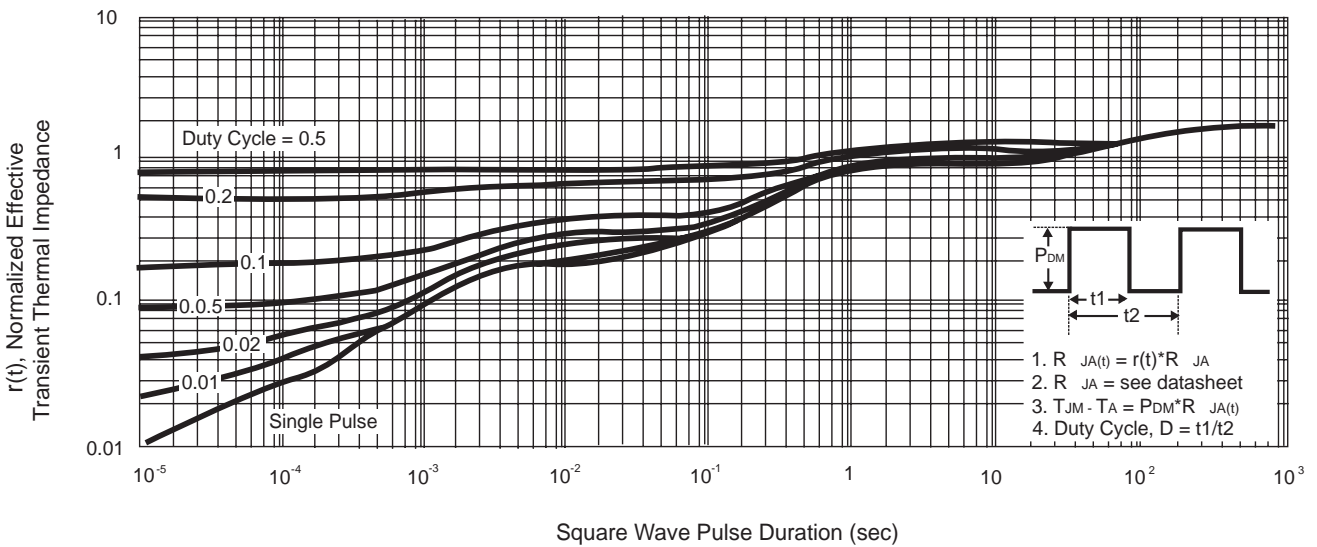
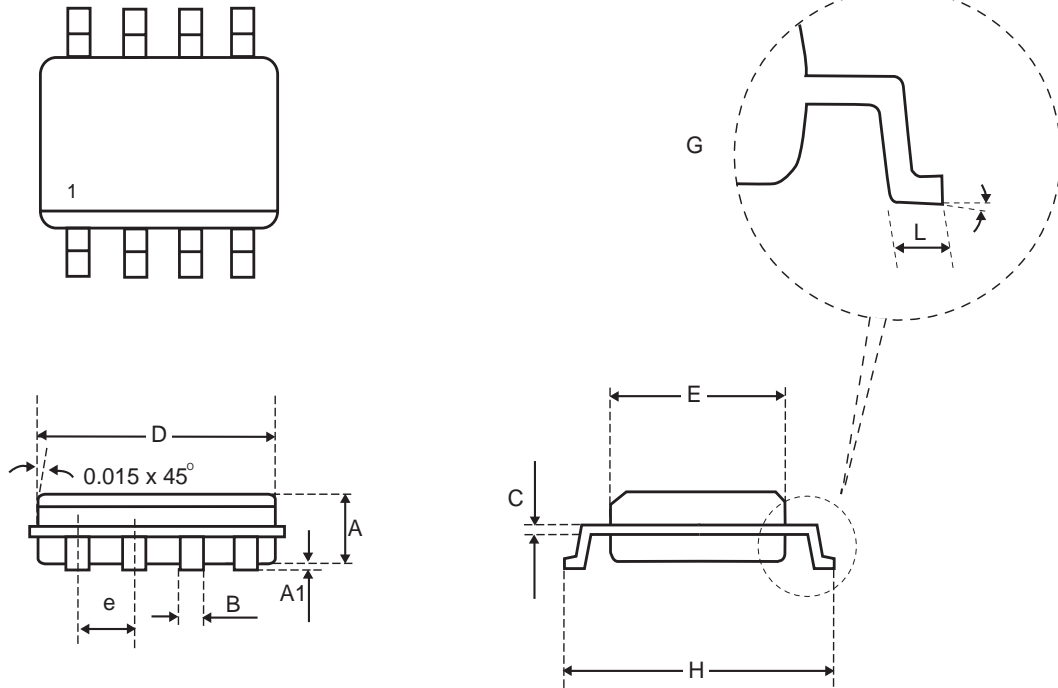


Figure 13. Normalized Thermal Transient Impedance Curve



Package Outline Dimensions

SO-8

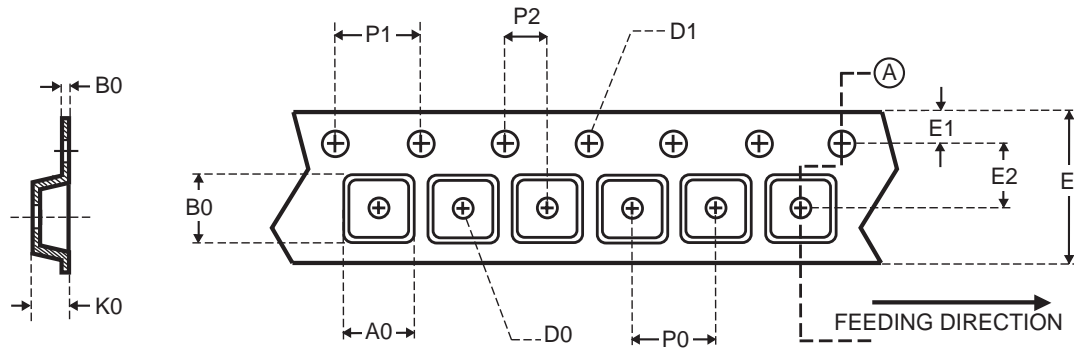


SYMBOLS	MILLIMETERS		INCHES	
	Min.	Max.	Min.	Max.
A	1.35	1.75	0.053	0.069
A1	0.10	0.25	0.004	0.010
B	0.41 Typ.		0.016 Typ.	
C	0.20 Typ.		0.008 Typ.	
D	4.80	4.98	0.189	0.196
E	3.81	3.99	0.150	0.157
e	1.25 Typ.		0.05 Typ.	
H	5.79	6.20	0.228	0.244
L	0.41	1.27	0.016	0.050
	0°	8°	0°	8°



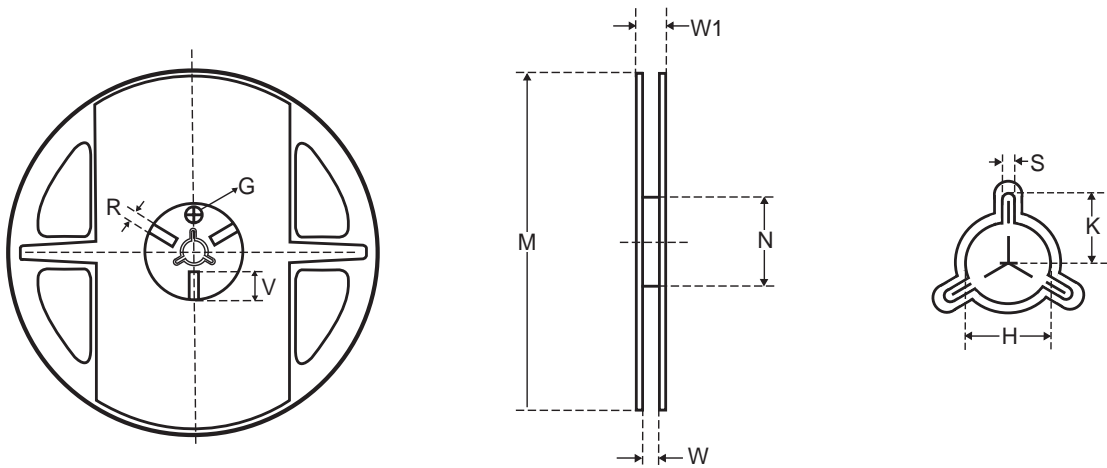
Carrier Tape & Reel Dimensions

SO-8



Package	A0	B0	K0	D0	D1	E	E1	E2	P0	P1	P2	T
SOP 8N 150 mil	6.40	5.20	2.10	1.50 (Min.)	1.50 +0.10 -0.10	12.00 ±0.30	1.75	5.50 ±0.05	8.00	4.00	2.00 ±0.05	0.30 ±0.05

UNIT : mm



Tape size	Reel Size	M	N	W	W1	H	K	S	G	R	V
12mm	330	330 ± 1	62 ± 1.5	12.4 ± 0.2	16.8 - 0.4	12.75 ± 0.15	-	2.0 ± 0.15	-	-	-

UNIT : mm