



South Sea Semiconductor

SSM8405

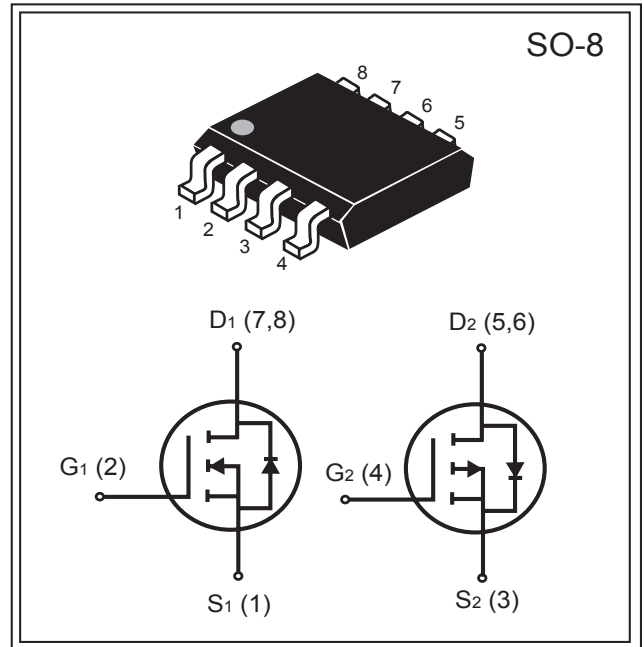
Dual Enhancement Mode MOSFET

Product Summary (N-Channel)

V _{DS} (V)	I _D (A)	R _{DS(ON)} (mΩ) Max
30V	7A	25 @V _{GS} = 10V
		35 @V _{GS} = 5V
		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
		75 @V _{GS} = - 5V
		90 @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}	±25	±25	
Drain Current-Continuous @ Ta	25 °C	I _D	7	-5	A
	70 °C		6	-4.5	
-Pulsed ^b		I _{DM}	30	-20	
Drain-Source Diode Forward Current ^a		I _S	1.6	-1.6	
Maximum Power Dissipation ^a	Ta=25 °C	P _D	2.0		W
	Ta=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 _{θJA}	62.5	°C/W
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South Sea Semiconductor, October 2007 (Rev 3.0)

**N-Channel 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} = $\pm$ 25V, V _{DS} =0V			$\pm$ 100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250 μ A	1	1.6	2	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =6.6A		18	25	m Ω
		V _{GS} =5V, I _D =5A		28	35	
		V _{GS} =4.5V, I _D =5A		32	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 Ω		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

**P-Channel 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} = $\pm$ 25V, V _{DS} =0V			$\pm$ 100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D = - 250 μ A	-1	-1.9	-2.5	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} = - 10V, I _D = - 5A		38	45	m Ω
		V _{GS} = - 5V, I _D = - 3.5A		65	75	
		V _{GS} = - 4.5V, I _D = - 3.0A		80	90	
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		720	845	pF
Output Capacitance	C _{oss}	V _{GS} =0V		155	185	
Reverse Transfer Capacitance	C _{rss}	f=1.0MHz		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 Ω , R _L =2.7 Ω		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 :

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

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South Sea Semiconductor, October 2007 (Rev 3.0)



N-Channel

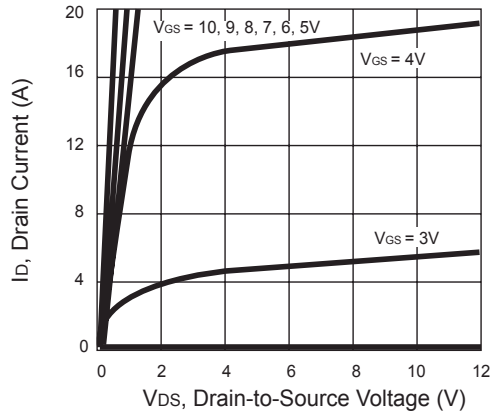


Figure 1. Output Characteristics

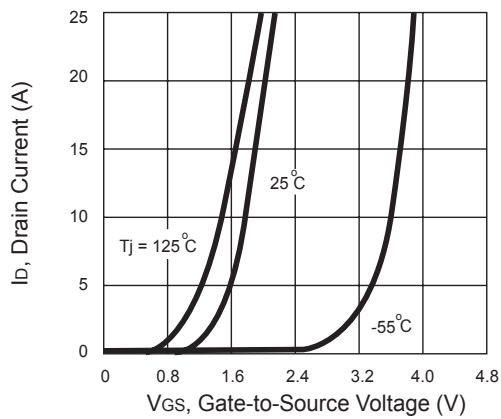


Figure 2. Transfer Characteristics

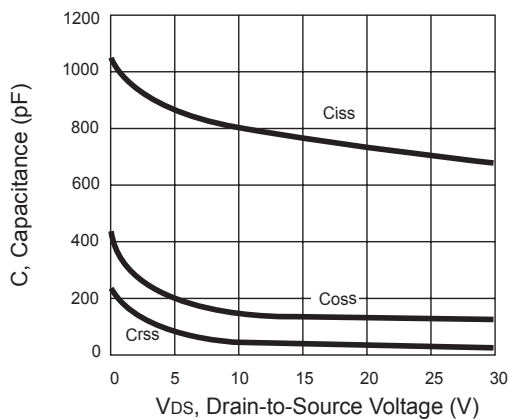


Figure 3. Capacitance

P-Channel

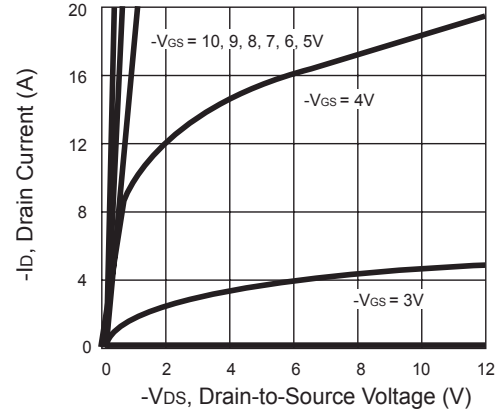


Figure 1. Output Characteristics

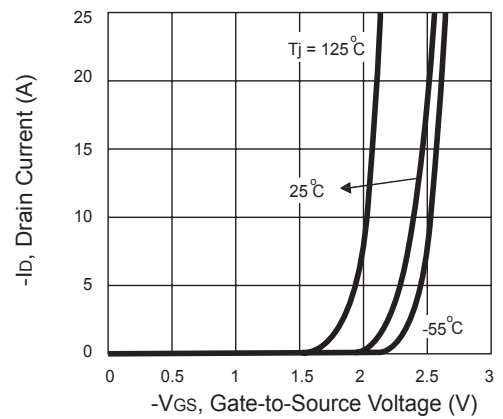


Figure 2. Transfer Characteristics

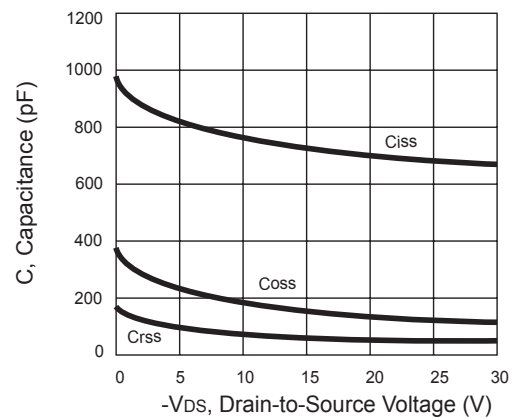


Figure 3. Capacitance



N-Channel

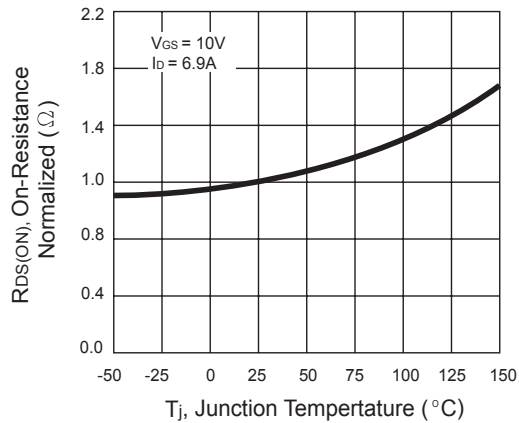


Figure 4. On-Resistance Variation with Temperature

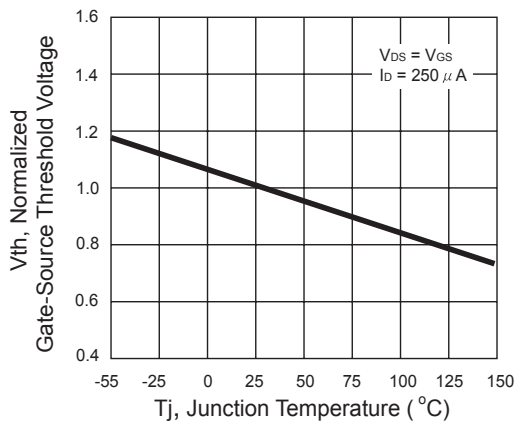


Figure 5. Gate Threshold Variation with Temperature

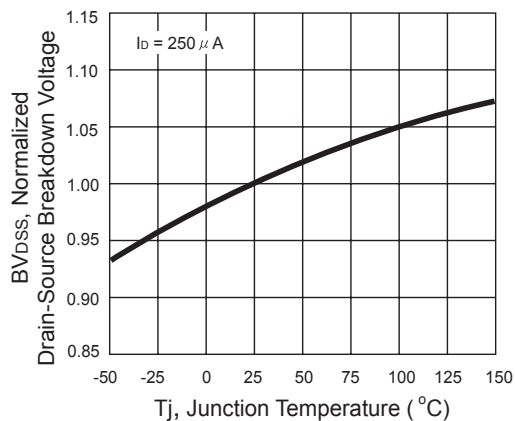


Figure 6. Breakdown Voltage Variation with Temperature

P-Channel

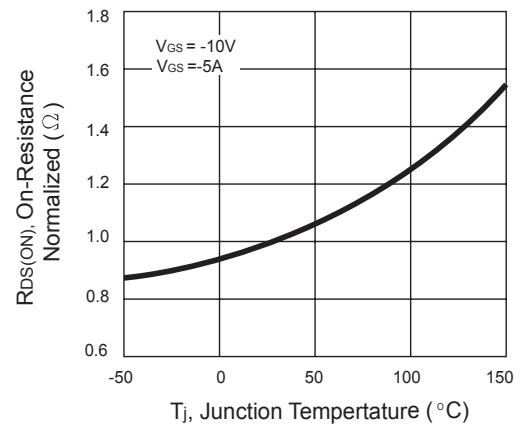


Figure 4. On-Resistance Variation with Temperature

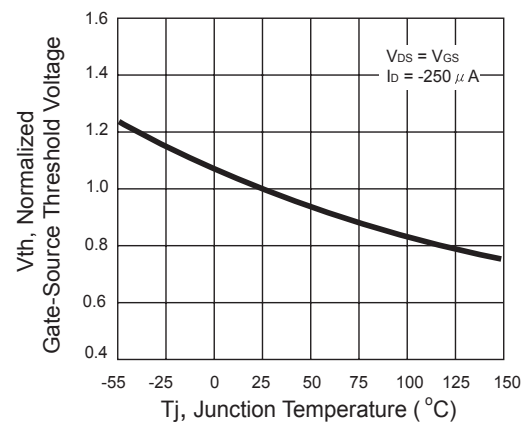


Figure 5. Gate Threshold Variation with Temperature

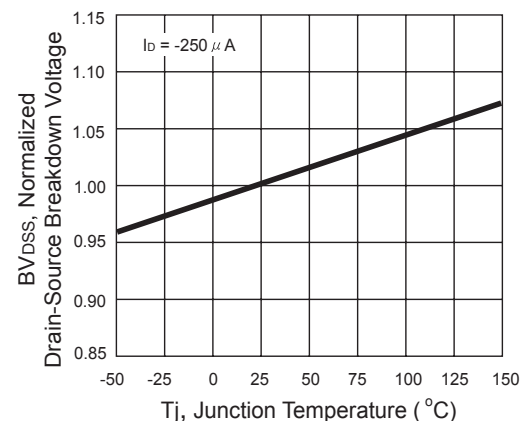


Figure 6. Breakdown Voltage Variation with Temperature



N-Channel

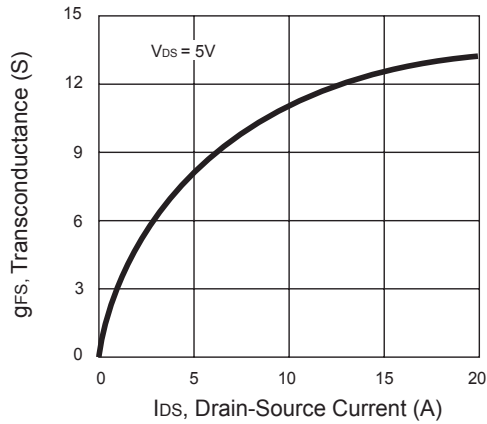


Figure 7. Transconductance Variation with Drain Current

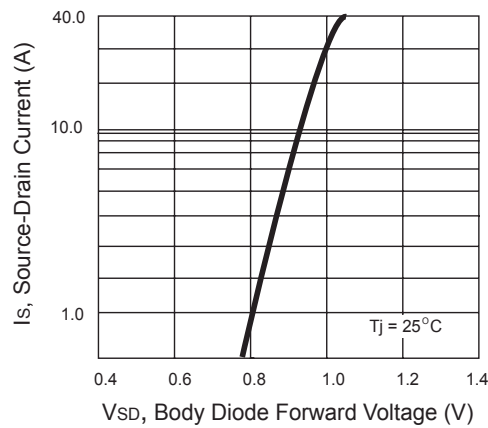


Figure 8. Body Diode Forward Voltage Variation with Source Current

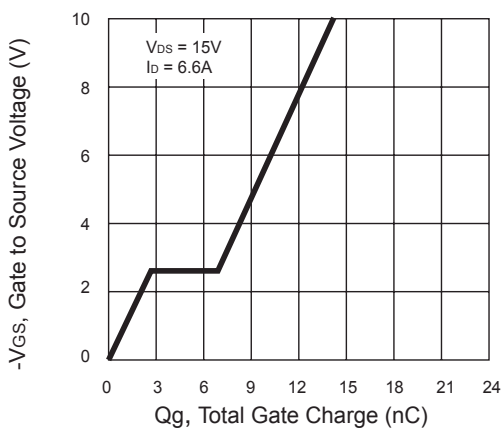


Figure 9. Gate Charge

P-Channel

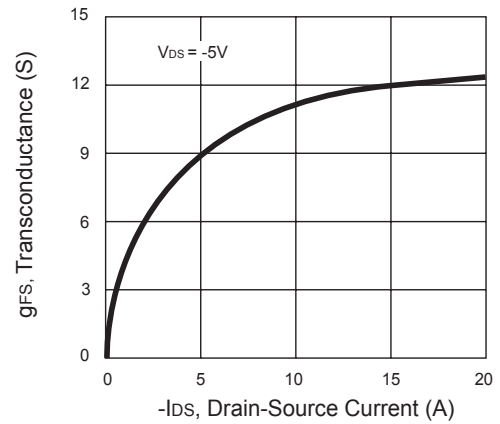


Figure 7. Transconductance Variation with Drain Current

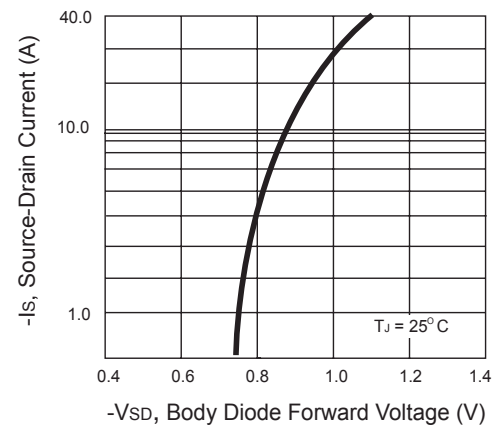


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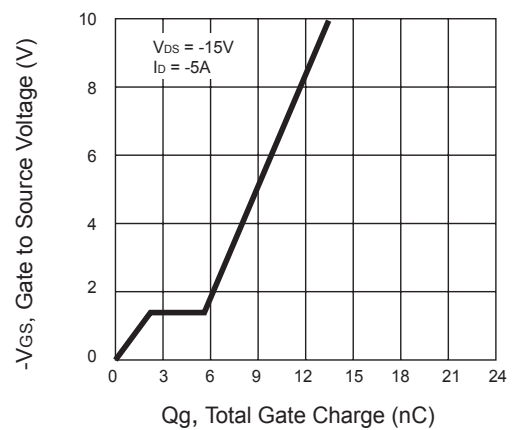


Figure 9. Gate Charge



N-Channel

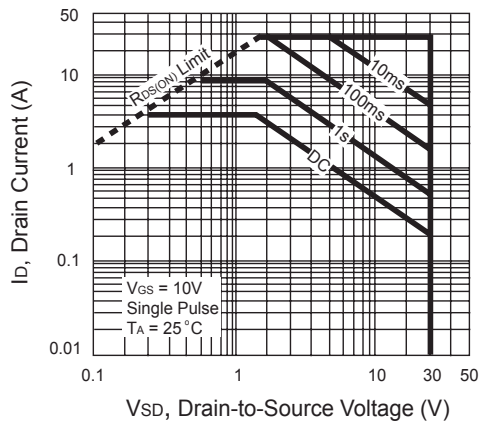


Figure 10. Maximum Safe Operating Area

P-Channel

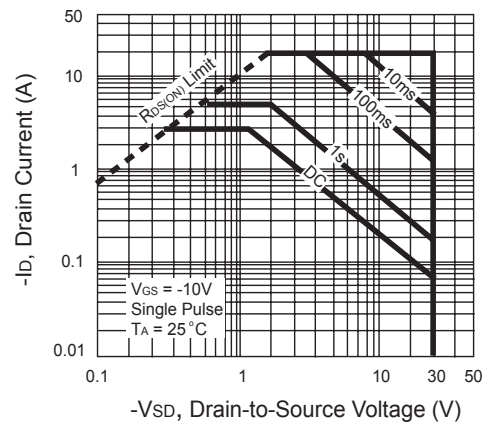


Figure 10. Maximum Safe Operating Area

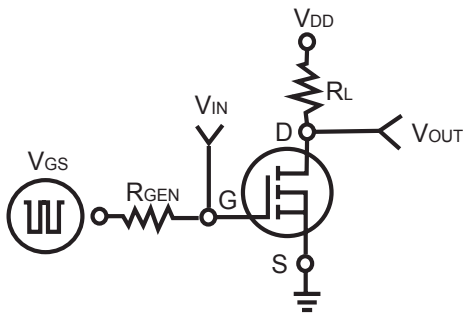


Figure 11. Switching Test Circuit

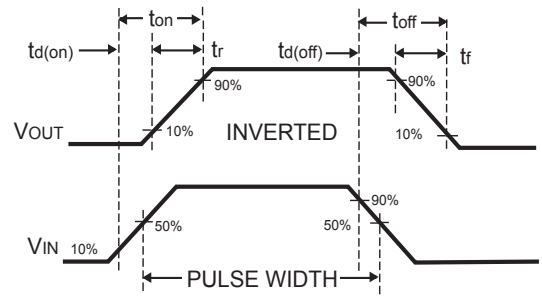


Figure 12. Switching Waveforms



N-Channel

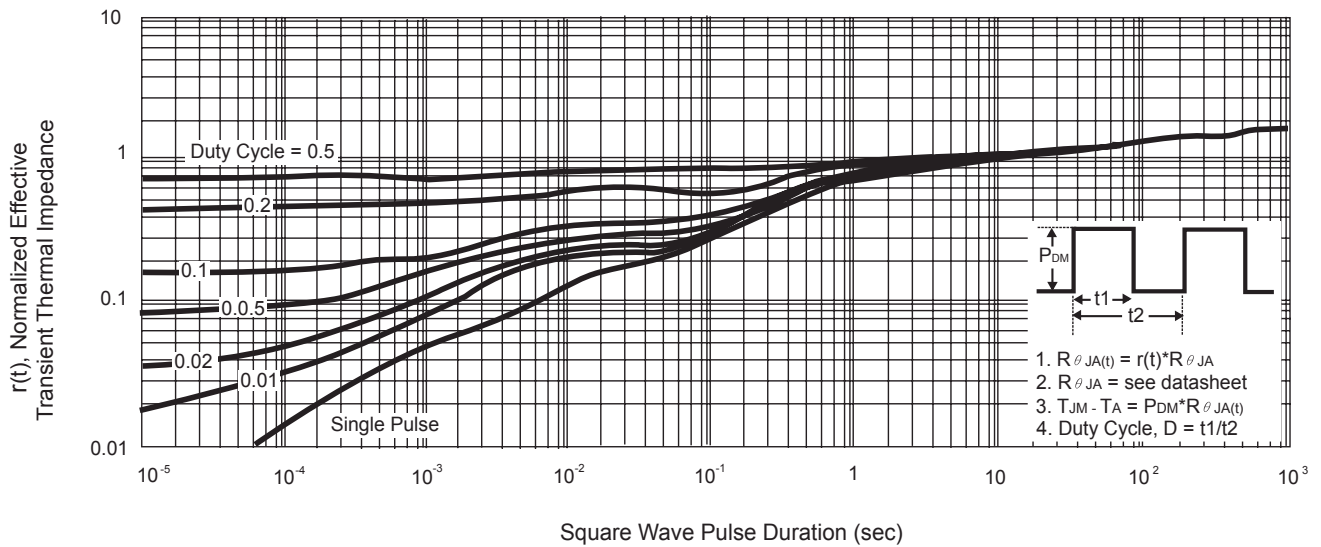


Figure 13. Normalized Thermal Transient Impedance Curve

P-Channel

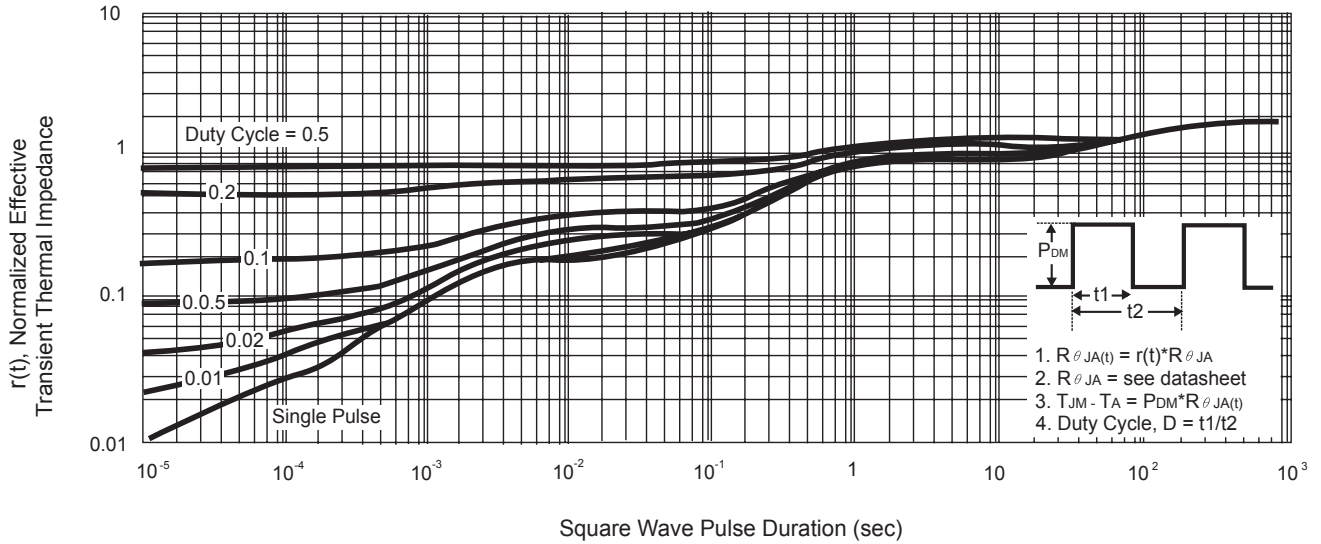
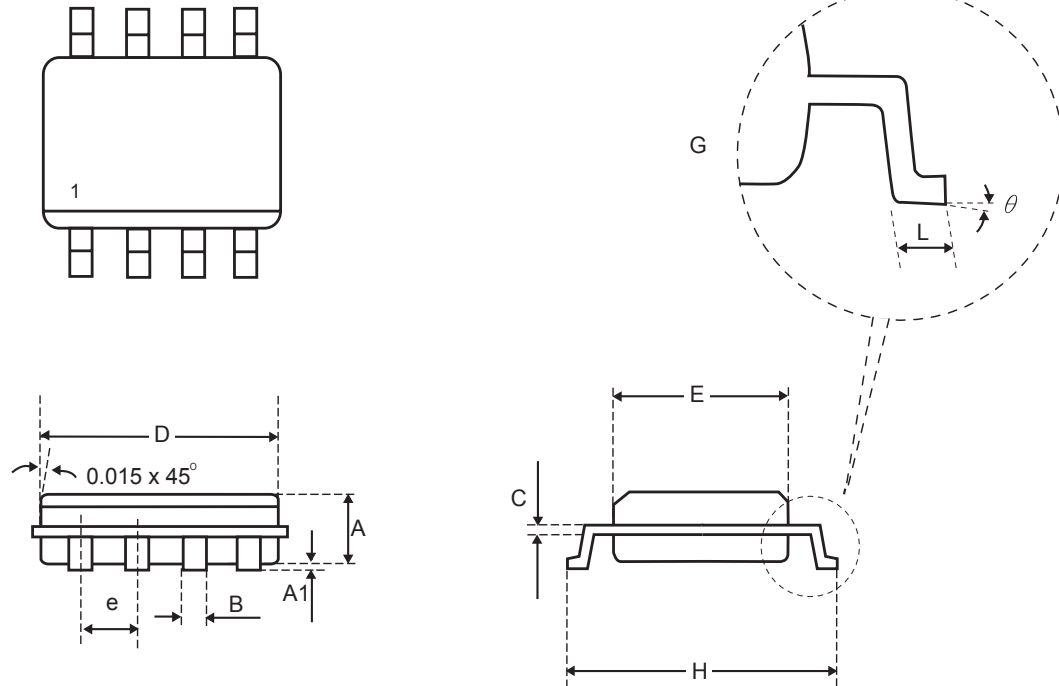


Figure 13. Normalized Thermal Transient Impedance Curve



Package Outline Dimensions

SO-8

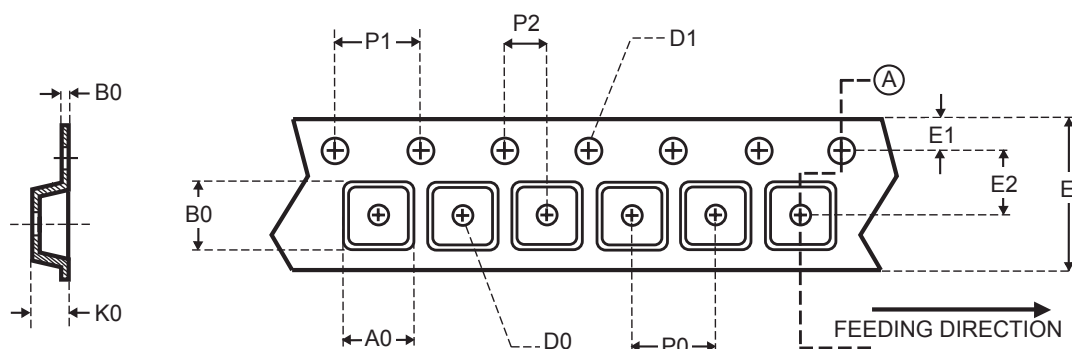


SYMBOLS	MILLIMETERS		INCHES	
	Min.	Max.	Min.	Max.
A	1.35	1.75	0.053	0.069
A1	0.10	0.25	0.004	0.010
B	0.41 Typ.		0.016 Typ.	
C	0.20 Typ.		0.008 Typ.	
D	4.80	4.98	0.189	0.196
E	3.81	3.99	0.150	0.157
e	1.25 Typ.		0.05 Typ.	
H	5.79	6.20	0.228	0.244
L	0.41	1.27	0.016	0.050
θ	0°	8°	0°	8°



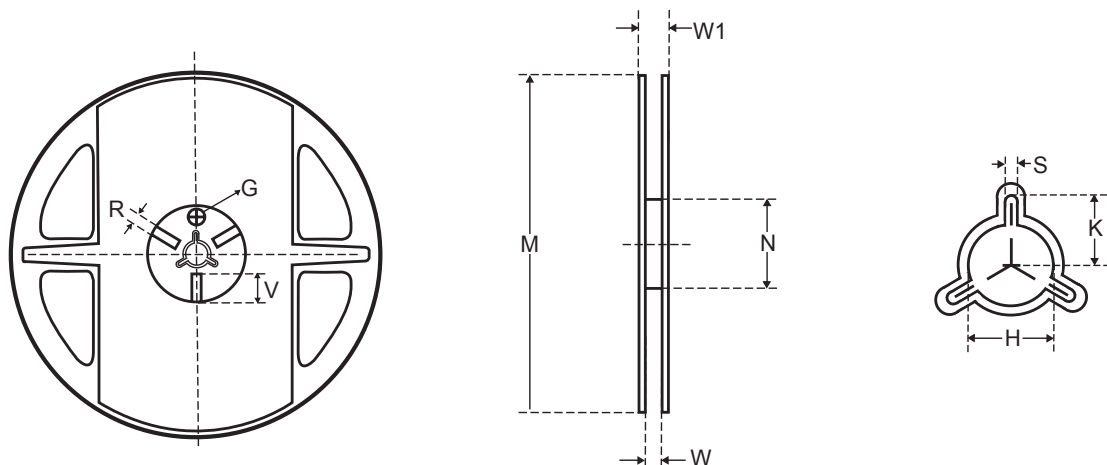
Carrier Tape & Reel Dimensions

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	$\phi 1.50$ (Min.)	$\phi 1.50$ +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	$\phi 330$	330 ± 1	62 ± 1.5	12.4 ± 0.2	16.8 -0.4	$\phi 12.75$ ± 0.15	-	2.0 ± 0.15	-	-	-

UNIT : mm