



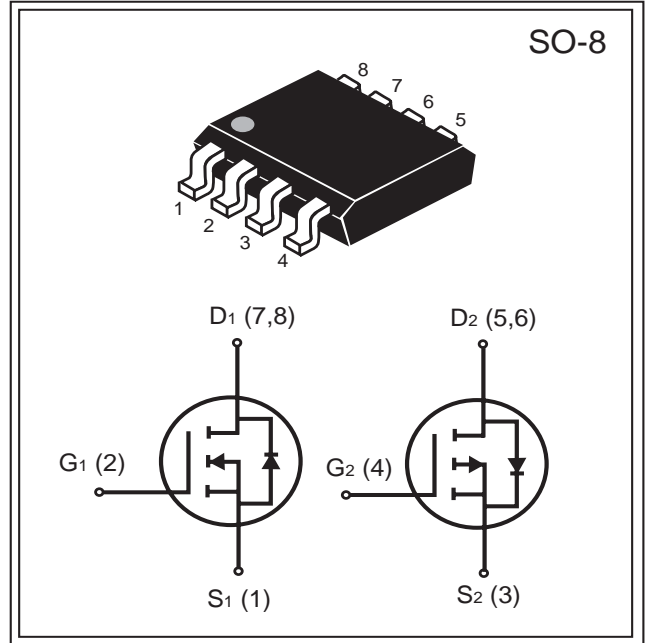
South Sea Semiconductor

SSM8450

Dual Enhancement Mode MOSFET

Product Summary (N-Channel)		
V _{DS} (V)	I _D (A)	R _{DS(ON)} (mΩ) Max
40V	5A	35 @V _{GS} = 10V
		60 @V _{GS} = 4.5V

Product Summary (P-Channel)		
V _{DS} (V)	I _D (A)	R _{DS(ON)} (mΩ) Max
-40V	-4A	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}	40	-40	V
Gate-Source Voltage	V _{GS}	±22	±22	
Drain Current-Continuous @ T _a	I _D	25 °C	5	A
		70 °C	4.2	
-Pulsed ^b	I _{DM}	20	-16	A
Drain-Source Diode Forward Current ^a	I _S	1.7	-1.7	
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, October 2005 (Rev 2.0)



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	40			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =32V, 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	2	3	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =5A		25	35	m
		V _{GS} =4.5V, I _D =4A		50	60	
On-State Drain Current	I _{D(ON)}	V _{DS} =5V, V _{GS} =10V	15			A
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =5A		8		S
Input Capacitance	C _{ISS}	V _{DS} =10V		908	1000	PF
Output Capacitance	C _{OSS}	V _{GS} =0V		128	140	
Reverse Transfer Capacitance	C _{RSS}	f=1.0MHz		93	102	
Gate resistance	R _g	V _{GS} =0V, V _{DS} =0V, f=1.0MHz		3		
Turn-On Delay Time	t _{D(ON)}	V _{DD} =15V, I _D =3A, V _{GS} =10V, R _{GEN} =4.7		18	20	ns
Rise Time	t _r			4.3	5	
Turn-Off Delay Time	t _{D(OFF)}			23	25	
Fall Time	t _f			9.5	11.5	
Total Gate Charge	Q _g	V _{DS} =24V, I _D =5A, V _{GS} =10V		18	19	nC
		V _{DS} =24V, I _D =5A, V _{GS} =4.5V		9	10	
Gate-Source Charge	Q _{gs}	V _{DS} =24V I _D =5A,		3.2	4	
Gate-Drain Charge	Q _{gd}	V _{GS} =4.5V		4	5	
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _D =1.7A		0.8	1.2	V

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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 μA	-40			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-32V, V _{GS} =0V			-1	μA
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 μA	-0.8	-1.5	-2.0	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =-10V, I _D =-4A		35	45	m
		V _{GS} =-4.5V, I _D =-3A		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 =-4A		9		S
Input Capacitance	C _{ISS}	V _{DS} =-10V V _{GS} =0V f=1.0MHz		1130	1240	pF
Output Capacitance	C _{OSS}			181	200	
Reverse Transfer Capacitance	C _{RSS}			110	120	
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, I _D =-2.2A V _{GS} =-10V, R _{GEN} =4.7 Ω		17	19	ns
Rise Time	t _r			7	7.8	
Turn-Off Delay Time	t _{D(OFF)}			83	90	
Fall Time	t _f			27.5	30	
Total Gate Charge	Q _g	V _{DS} =-24V, I _D =-4A, V _{GS} =-10V		20	23	nC
		V _{DS} =-24V, I _D =-4A, V _{GS} =-4.5V		10	11	
Gate-Source Charge	Q _{gs}	V _{DS} =-24V, I _D =-4A, V _{GS} =-4.5V		2.8	2.8	
Gate-Drain Charge	Q _{gd}			4	4.2	
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _D =-1.7A		-0.8	-1.2	V

Notes :

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



N-Channel

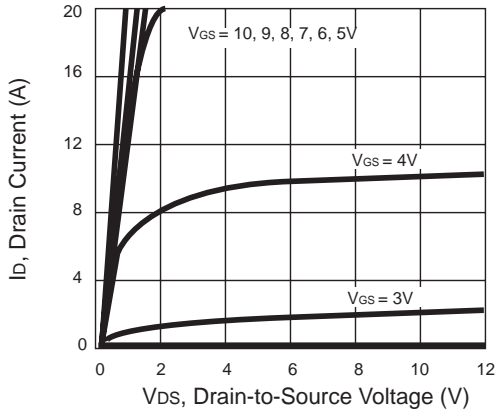


Figure 1. Output Characteristics

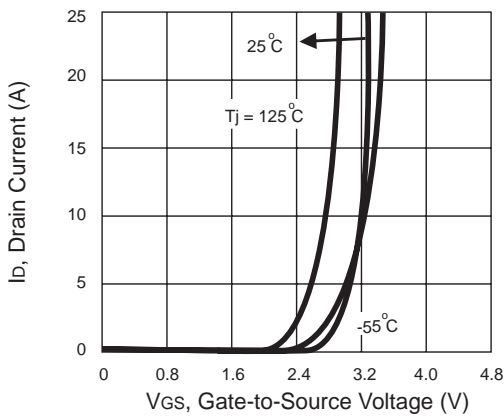


Figure 2. Transfer Characteristics

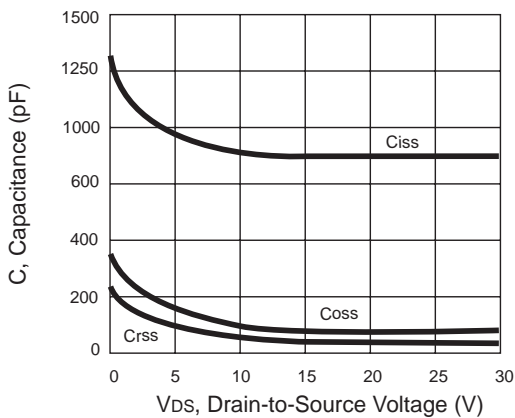


Figure 3. Capacitance

P-Channel

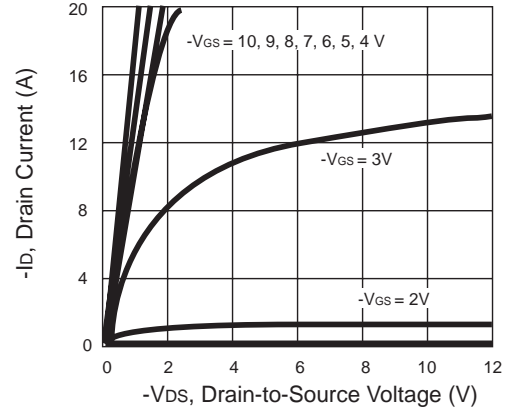


Figure 1. Output Characteristics

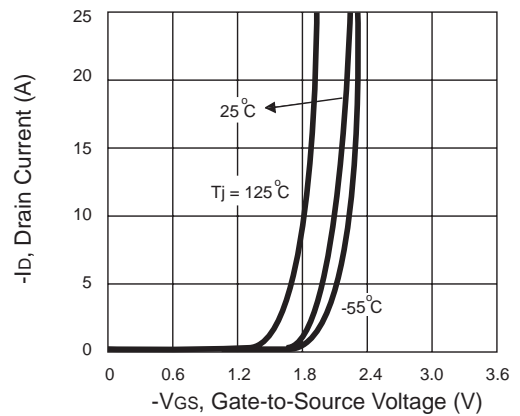


Figure 2. Transfer Characteristics

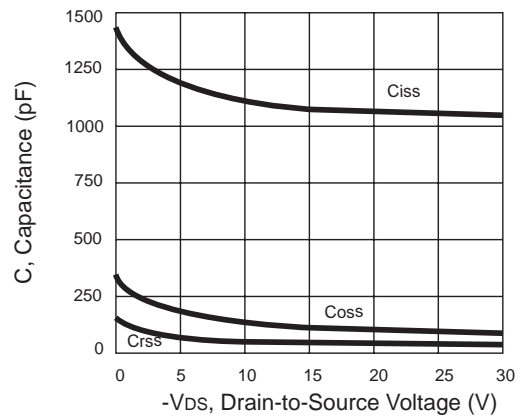


Figure 3. Capacitance



N-Channel

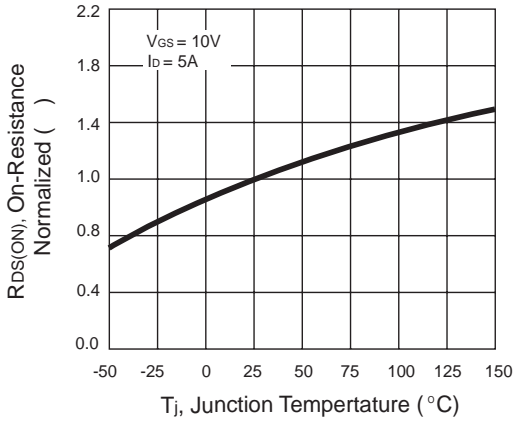


Figure 4. On-Resistance Variation with Temperature

P-Channel

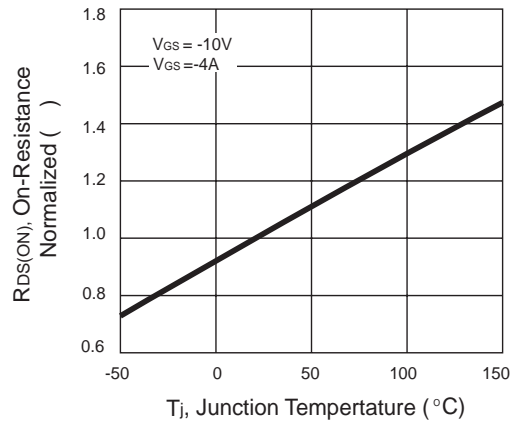


Figure 4. On-Resistance Variation with Temperature

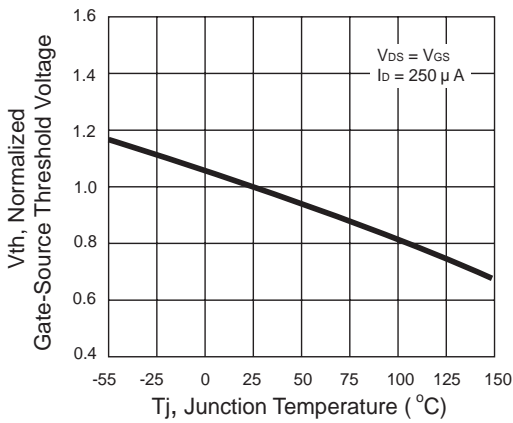


Figure 5. Gate Threshold Variation with Temperature

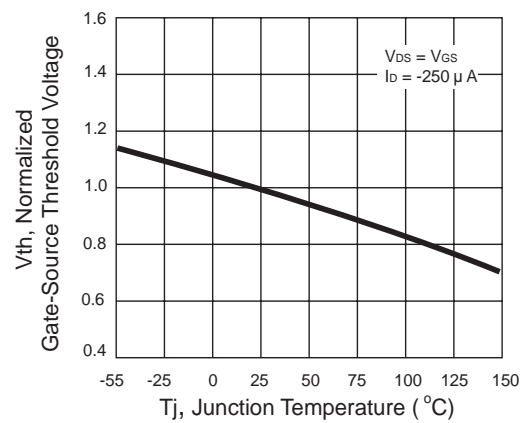


Figure 5. Gate Threshold Variation with Temperature

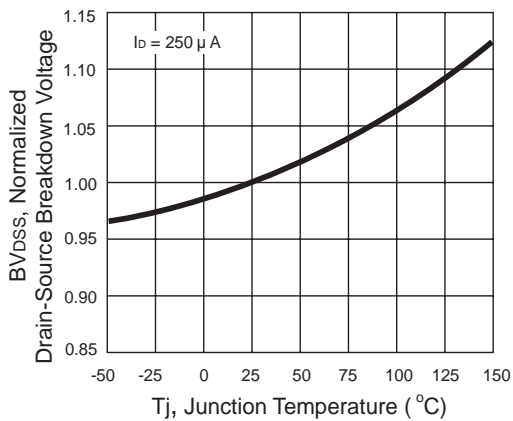


Figure 6. Breakdown Voltage Variation with Temperature

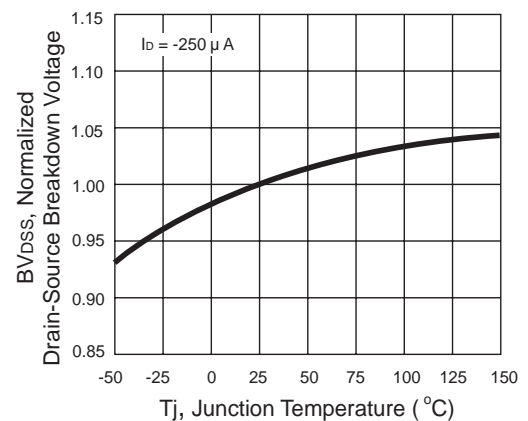


Figure 6. Breakdown Voltage Variation with Temperature



N-Channel

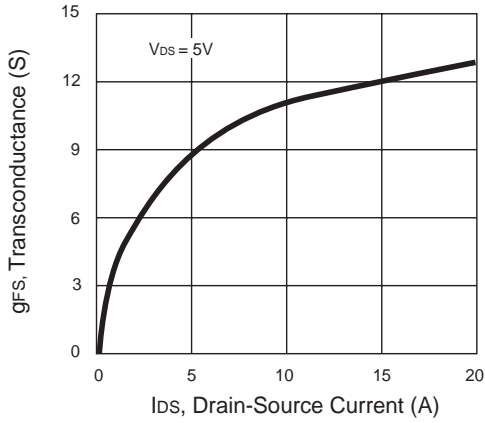


Figure 7. Transconductance Variation with Drain Current

P-Channel

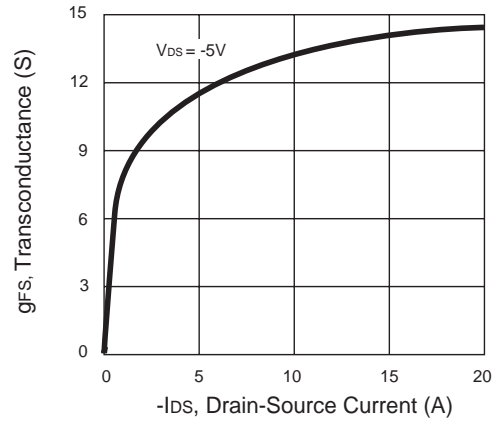


Figure 7. Transconductance Variation with Drain Current

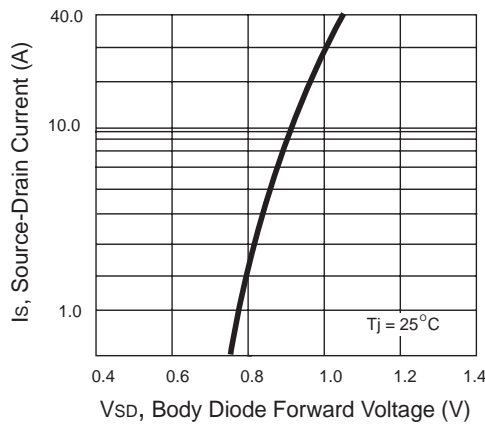


Figure 8. Body Diode Forward Voltage Variation with Source Current

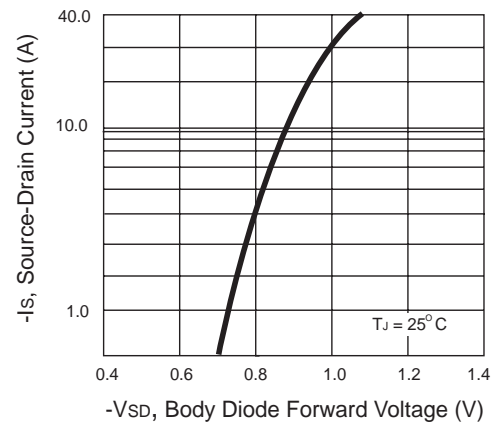


Figure 8. Body Diode Forward Voltage Variation with Source Current

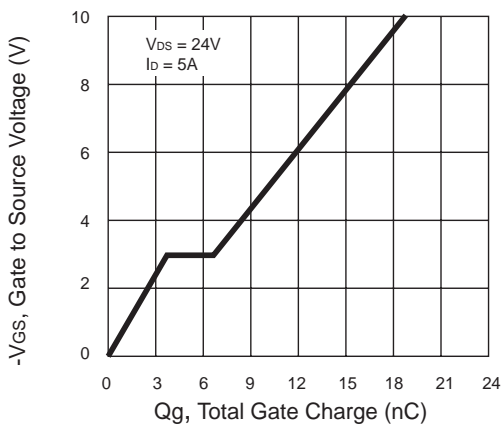


Figure 9. Gate Charge

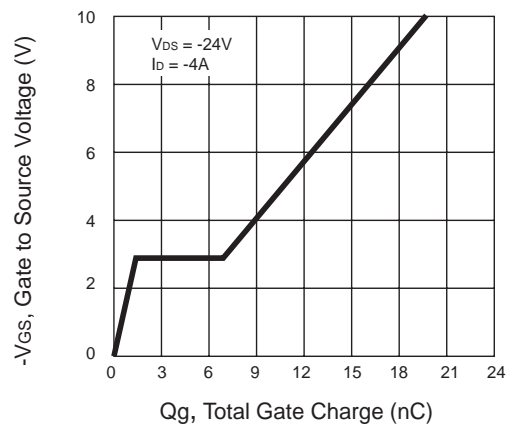


Figure 9. Gate Charge



N-Channel

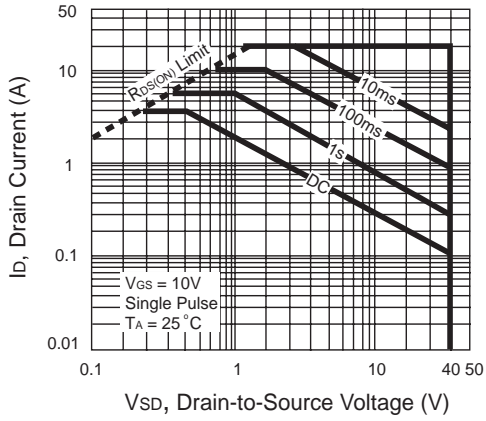


Figure 10. Maximum Safe Operating Area

P-Channel

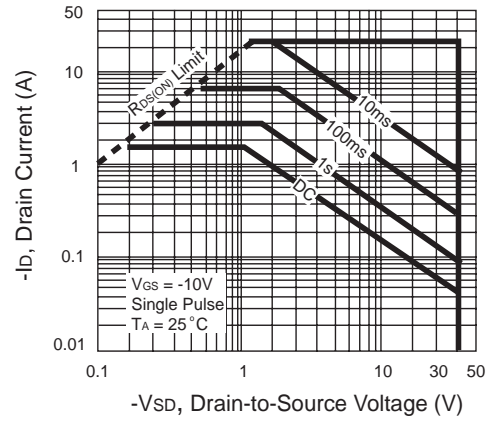


Figure 10. Maximum Safe Operating Area

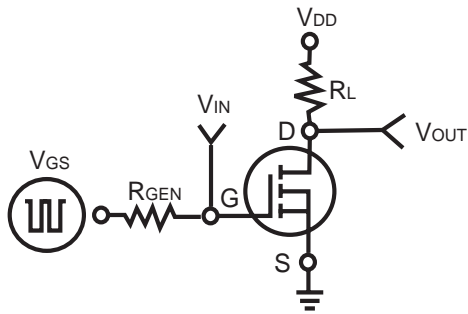


Figure 11. Switching Test Circuit

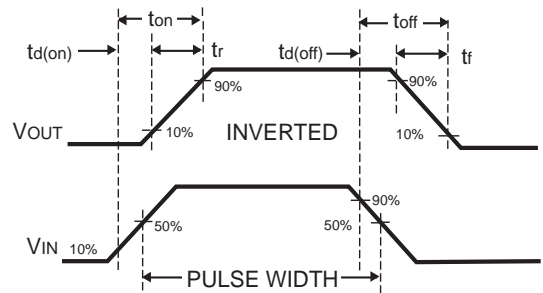


Figure 12. Switching Waveforms



N-Channel

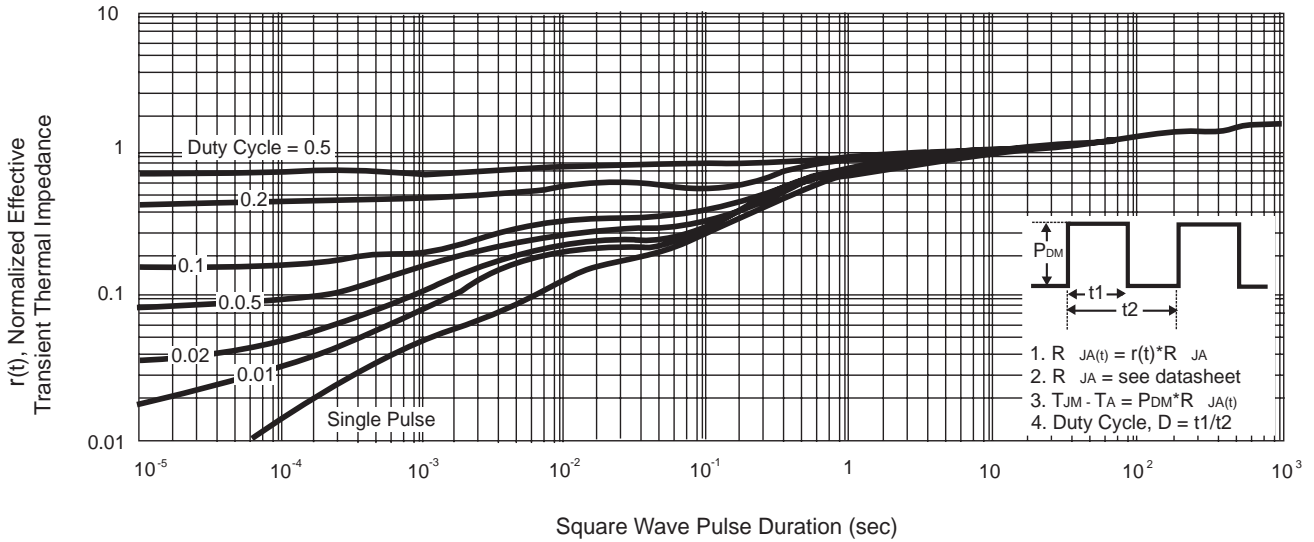


Figure 13. Normalized Thermal Transient Impedance Curve

P-Channel

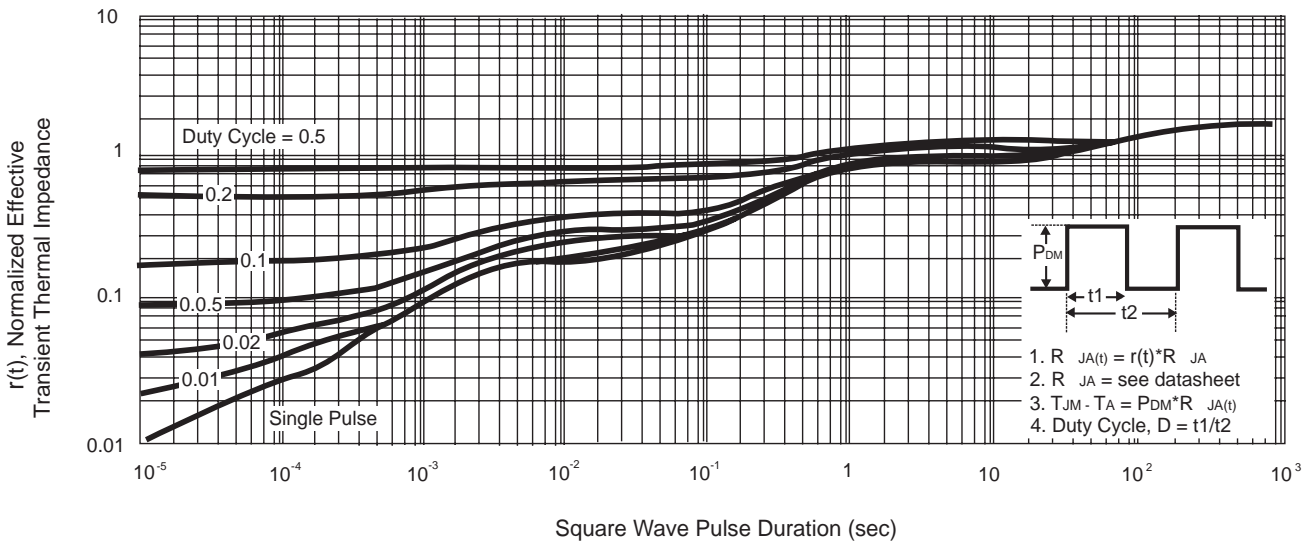
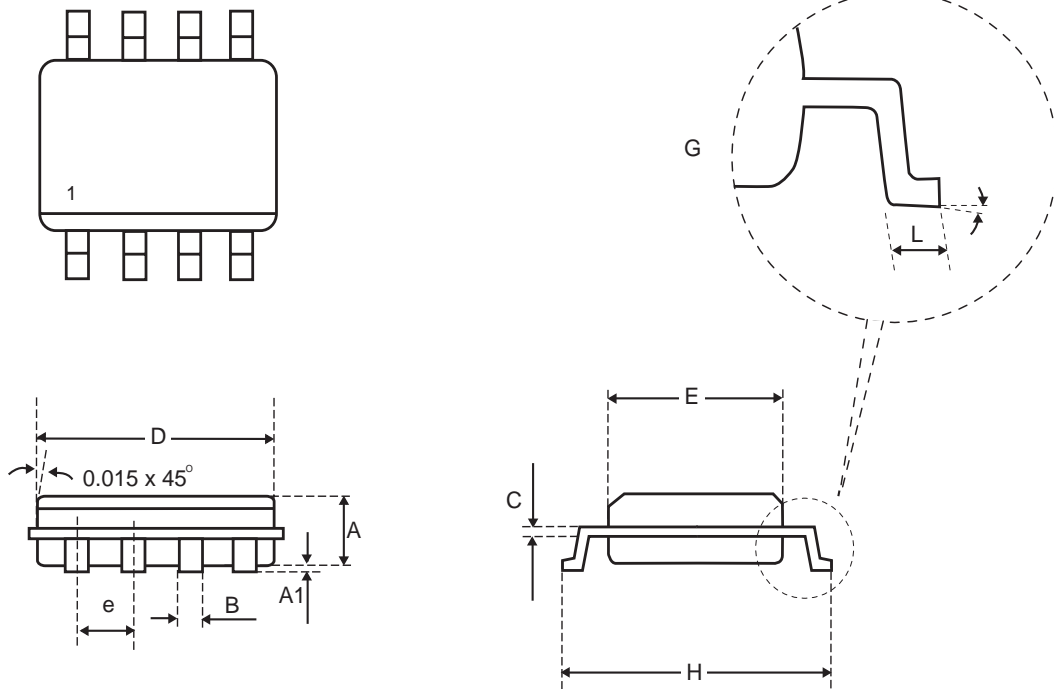


Figure 13. Normalized Thermal Transient Impedance Curve



Package Outline Dimensions

SO-8



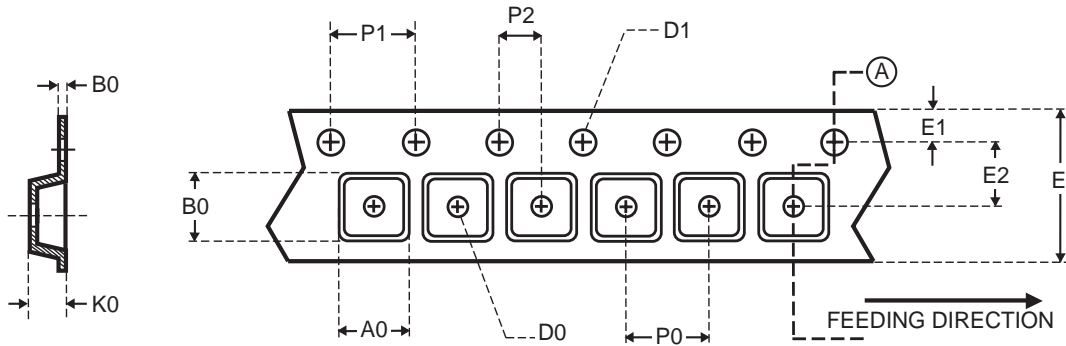
SYMBOLS	MILLIMETERS		INCHES	
	Min.	Max.	Min.	Max.
A	1.35	1.75	0.053	0.069
A1	0.10	0.25	0.004	0.010
B	0.41 Typ.		0.016 Typ.	
C	0.20 Typ.		0.008 Typ.	
D	4.80	4.98	0.189	0.196
E	3.81	3.99	0.150	0.157
e	1.25 Typ.		0.05 Typ.	
H	5.79	6.20	0.228	0.244
L	0.41	1.27	0.016	0.050
	0°	8°	0°	8°

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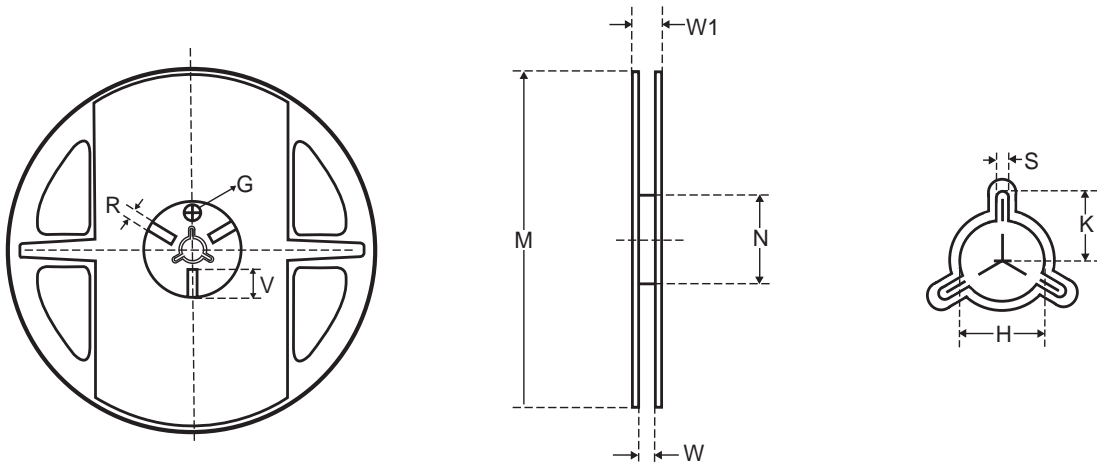
Carrier Tape & Reel Dimensions

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