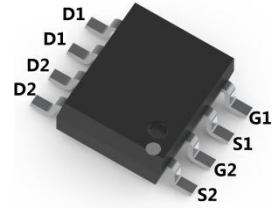


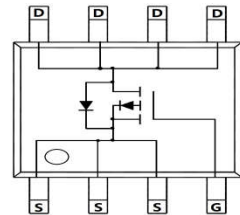
MOSFET (P-CHANNEL)

FEATURES

- $V_{DS}=-30V$
- $I_D=-9.7A$ ($V_{GS}=-10V$)
- $R_{DS(ON)}<20m\Omega$ ($V_{GS}=-10V$)
 $R_{DS(ON)}<35m\Omega$ ($V_{GS}=-4.5V$)



SOP-8



MECHANICAL DATA

- Case: SOP-8
- Case material: Molded plastic. UL flammability
- Classification rating: 94V-0
- Weight: 0.3 grams (approximate)

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

Parameter		Symbol	Typ	Max	Unit
Drain-Source Voltage		V_{DS}		-30	V
Drain-Source Voltage		V_{GS}		± 20	
Continuous Drain current	$T_A=25^{\circ}C$	I_D		-9.7	A
	$T_A=70^{\circ}C$			-7.8	
Pulsed Drain Current (note 3)		I_{DM}		-70	
Avalanche Current (note 3)		I_{AS}, I_{AR}		-27	
Avalanche energy $L=0.1mH$ (note 3)		E_{AS}, E_{AR}		36	mJ
Power Dissipation (note 2)	$T_A=25^{\circ}C$	P_D		3.1	W
	$T_A=70^{\circ}C$			2	
Junction and Storage Temperature Range		T_J, T_{STG}		-55~150	$^{\circ}C$
Thermal resistance from junction to ambient (note 1, $t \leq 10s$)		$R_{\theta JA}$	31	40	$^{\circ}C/W$
Thermal resistance from junction to ambient (note 1&4, steady state)			59	75	
Thermal resistance from junction to lead (steady state)			$R_{\theta JL}$	16	

MOSFET (P-CHANNEL)
ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Drain-source breakdown voltage	V_{DS}	-30			V	$I_D=-250\mu\text{A}, V_{GS}=0\text{V}$
Zero gate voltage drain current	I_{DSS}			-1	μA	$V_{DS}=-30\text{V}, V_{GS}=0\text{V}$
				-5		$V_{DS}=-30\text{V}, V_{GS}=0\text{V}, T_J=55^\circ\text{C}$
Gate-body leakage current	I_{GSS}			± 100	nA	$V_{DS}=0\text{V}, V_{GS}=\pm 20\text{V}$
Gate threshold voltage	$V_{GS(th)}$	-1.5	-2.0	-2.5	V	$V_{DS}=V_{GS}, I_D=-250\text{mA}$
On state drain current	$I_{D(ON)}$	-70			A	$V_{GS}=-10\text{V}, V_{DS}=-5\text{V}$
Static drain-source on resistance	$R_{DS(ON)}$		16.5	20	m Ω	$V_{GS}=-10\text{V}, I_D=-9.7\text{A}$
			24	29		$V_{GS}=-10\text{V}, I_D=-9.7\text{A}, T_J=125^\circ\text{C}$
			26	35		$V_{GS}=-4.5\text{V}, I_D=-7\text{A}$
Forward trans-conductance	g_{FS}		27		S	$V_{DS}=-5\text{V}, I_D=-9.7\text{A}$
Diode forward voltage	V_{SD}		-0.75	-1	V	$I_S=-1\text{A}, V_{GS}=0\text{V}$
Body-diode continuous current	I_S			-4	A	
Pulsed body-diode current (note 3)	I_{SM}			-70		
Input capacitance	C_{iss}		1040		pF	$V_{GS}=0\text{V}, V_{DS}=-15\text{V}, f=1\text{MHz}$
Output capacitance	C_{oss}		180			
Reverse transfer capacitance	C_{rss}		125			
Gate resistance	R_g	2	4	6	Ω	$V_{GS}=0\text{V}, V_{DS}=0\text{V}, f=1\text{MHz}$
Total gate charge	$Q_g(10\text{V})$		19		nC	$V_{GS}=-10\text{V}, V_{DS}=-15\text{V}, I_D=-9.7\text{A}$
Total gate charge	$Q_g(4.5\text{V})$		9.6			
Gate source charge	Q_{gs}		3.6			
Gate drain charge	Q_{gd}		4.6			
Turn-on delay time	$t_{D(on)}$		10		ns	$V_{GS}=-10\text{V}, V_{DS}=-15\text{V}, R_L=1.5\text{W}, R_{GEN}=3\text{W}$
Turn-on rise time	t_r		5.5			
Turn-off delay time	$t_{D(off)}$		26			
Turn-off fall time	t_f		9			
Body diode reverse recovery time	t_{rr}		11.5		nC	$I_F=-9.7\text{A}, di/dt=500\text{A/ms}$
Body diode reverse recovery charge	Q_{rr}		25			

Note:

1. The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$. The value in any given application depends on the user's specific board design.
2. The power dissipation P_D is based on $T_{J(MAX)}=150^\circ\text{C}$, using $\leq 10\text{s}$ junction-to-ambient thermal resistance.
3. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}=150^\circ\text{C}$. Ratings are based on low frequency and duty cycles to keep initial $T_J=25^\circ\text{C}$.
4. The $R_{\theta JA}$ is the sum of the thermal resistance from junction to lead $R_{\theta JL}$ and lead to ambient.
5. The static characteristics in Figures 1 to 6 are obtained using $<300\text{ms}$ pulses, duty cycle 0.5% max.
6. These curves are based on the junction-to-ambient thermal resistance which is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, assuming a maximum junction temperature of $T_{J(MAX)}=150^\circ\text{C}$. The SOA curve provides a single pulse rating.

MOSFET (P-CHANNEL)

TYPICAL CHARACTERISTICS

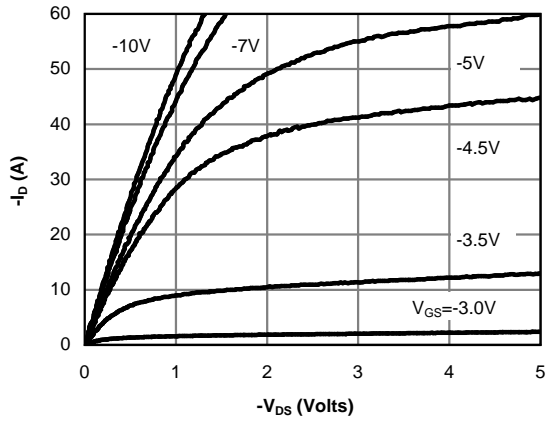


Figure 1: On-Region Characteristics (Note E)

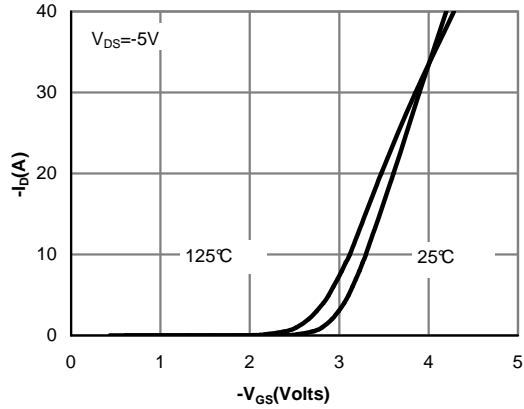


Figure 2: Transfer Characteristics (Note E)

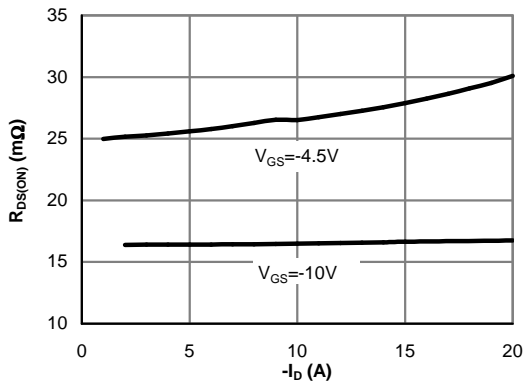


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

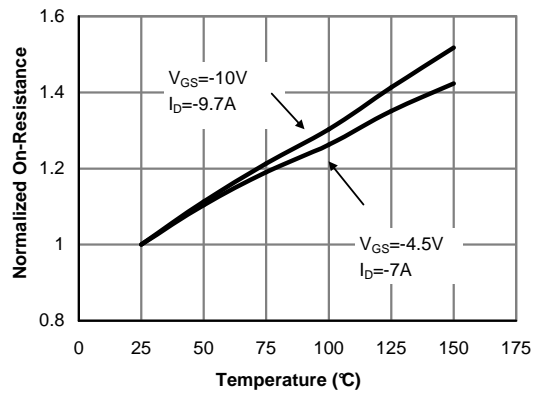


Figure 4: On-Resistance vs. Junction Temperature (Note E)

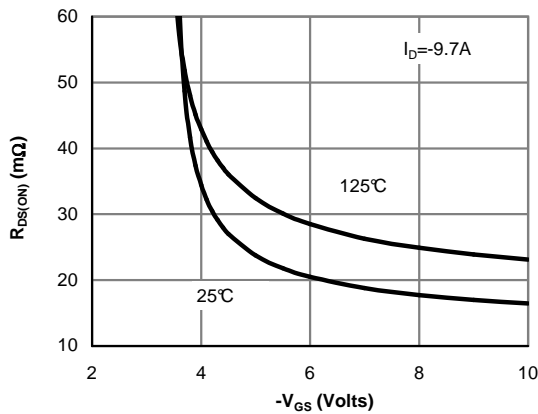


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

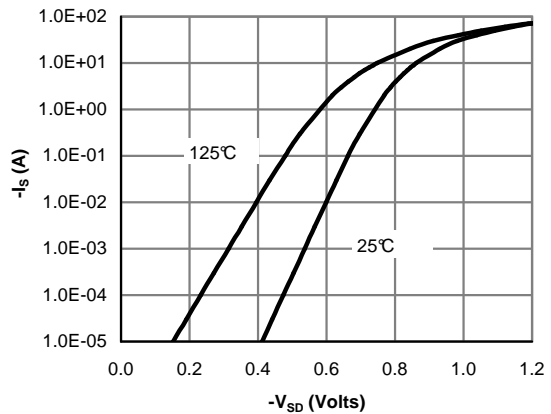


Figure 6: Body-Diode Characteristics (Note E)

MOSFET (P-CHANNEL)

TYPICAL CHARACTERISTICS (continued)

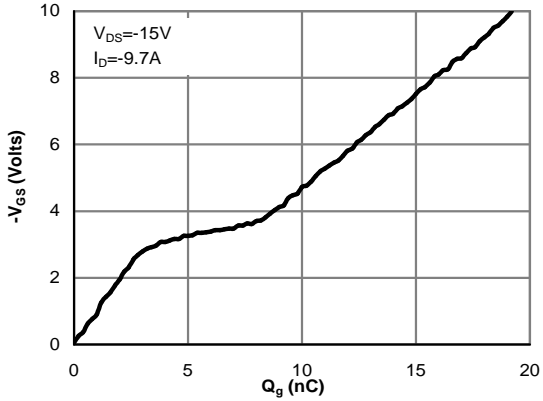


Figure 7: Gate-Charge Characteristics

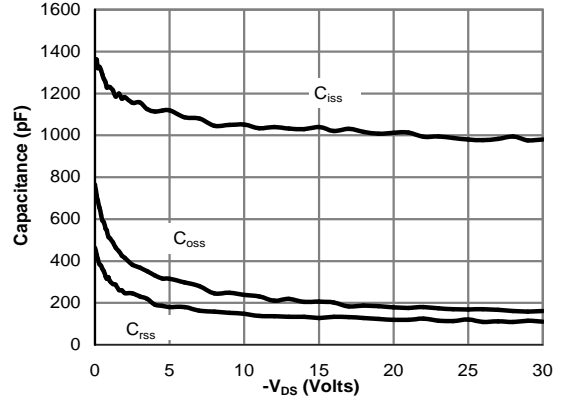


Figure 8: Capacitance Characteristics

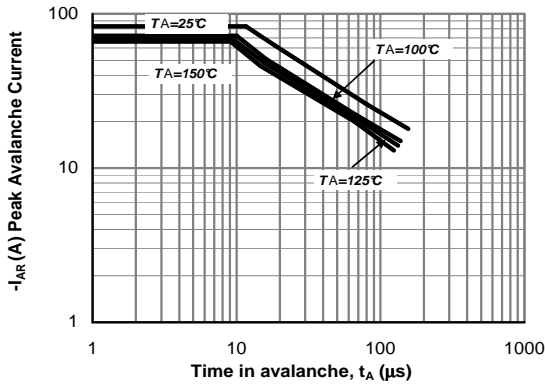


Figure 9: Single Pulse Avalanche capability (Note C)

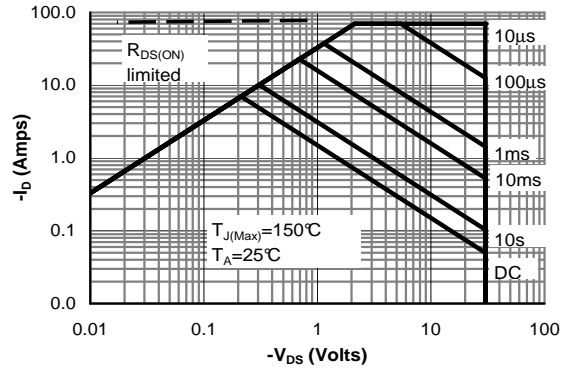


Figure 10: Maximum Forward Biased Safe Operating Area (Note F)

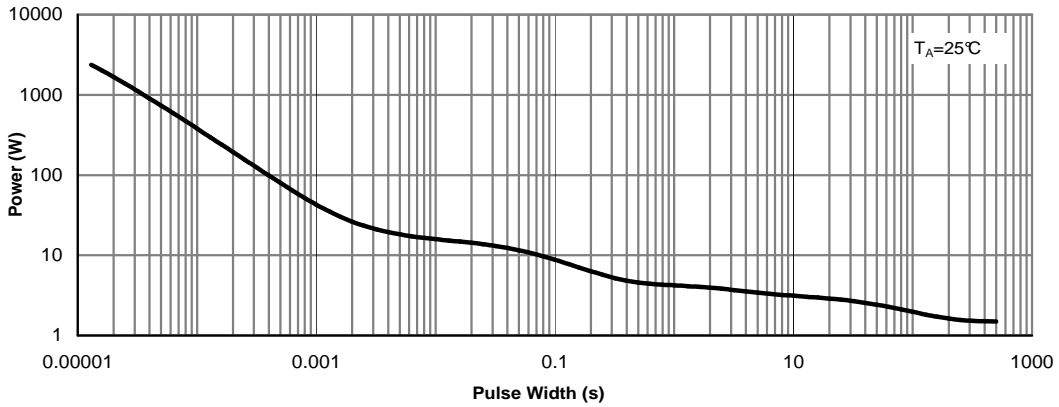


Figure 11: Single Pulse Power Rating Junction-to-Ambient (Note F)

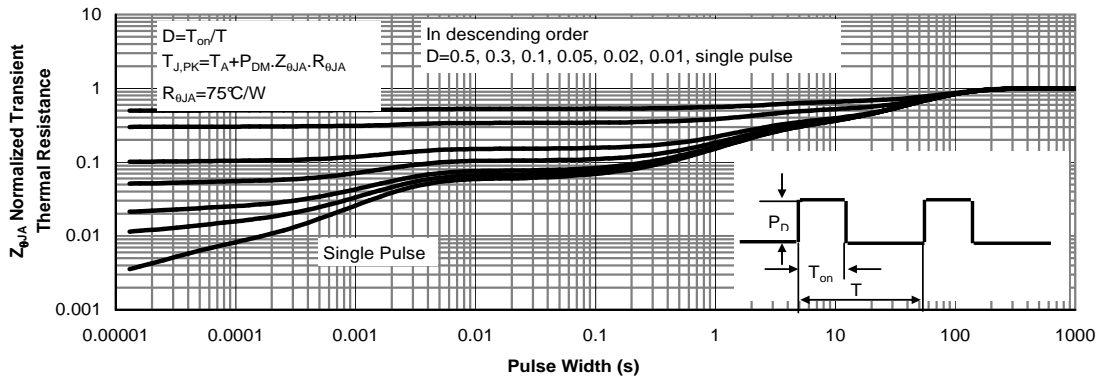
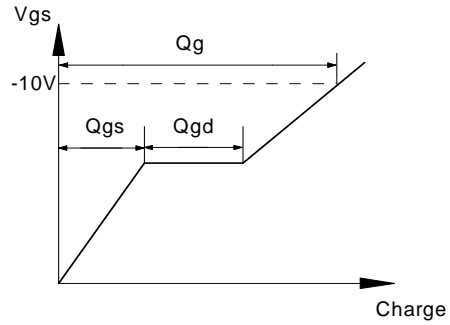
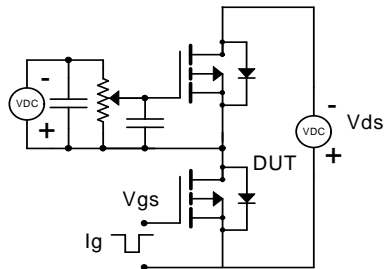


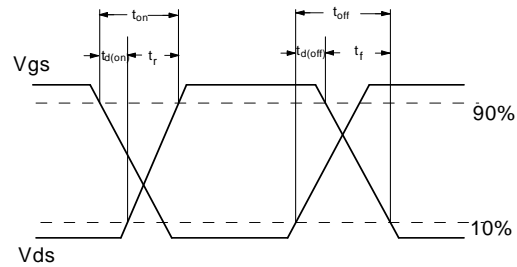
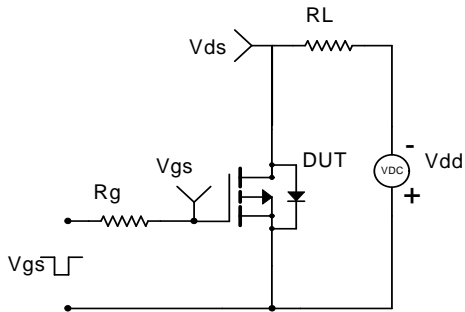
Figure 12: Normalized Maximum Transient Thermal Impedance (Note F)

MOSFET (P-CHANNEL)

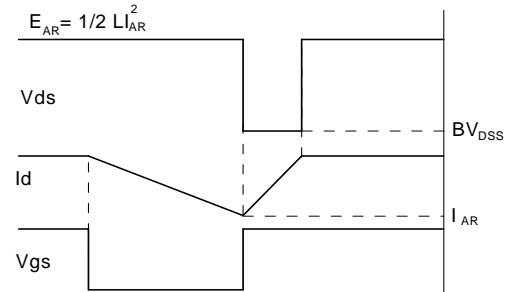
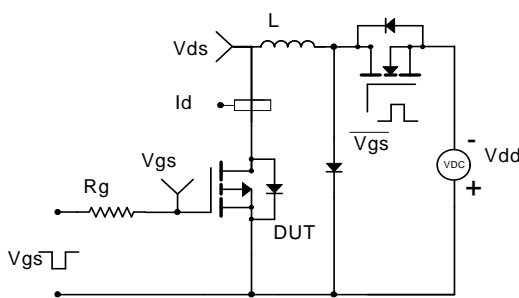
TEST CIRCUIT & WAVEFORM



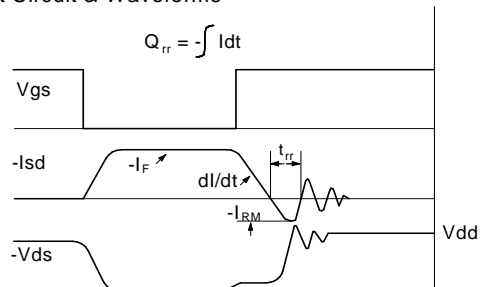
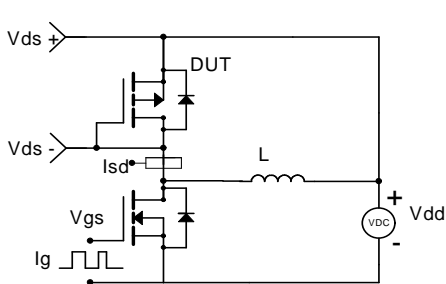
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

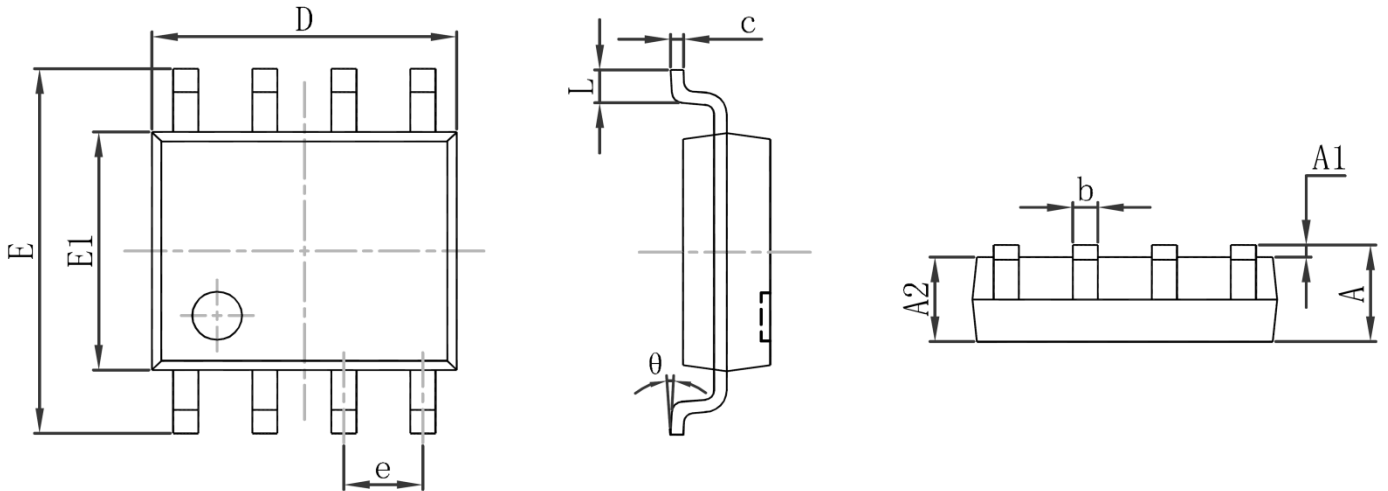


Diode Recovery Test Circuit & Waveforms



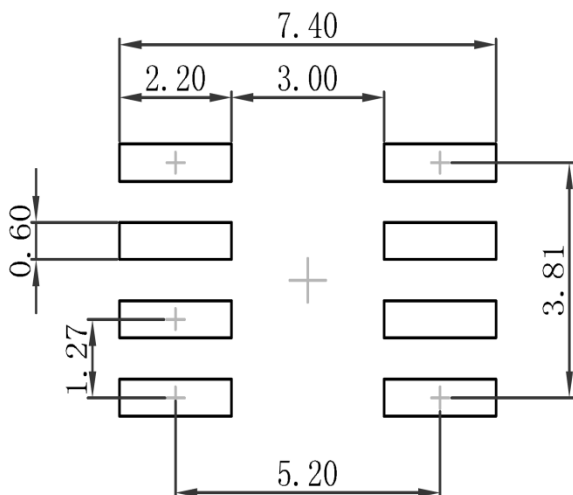
MOSFET (P-CHANNEL)

SOP-8 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	4.800	5.000	0.189	0.197
e	1.270(BSC)		0.050 (BSC)	
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

SOP-8 Suggested Pad Layout



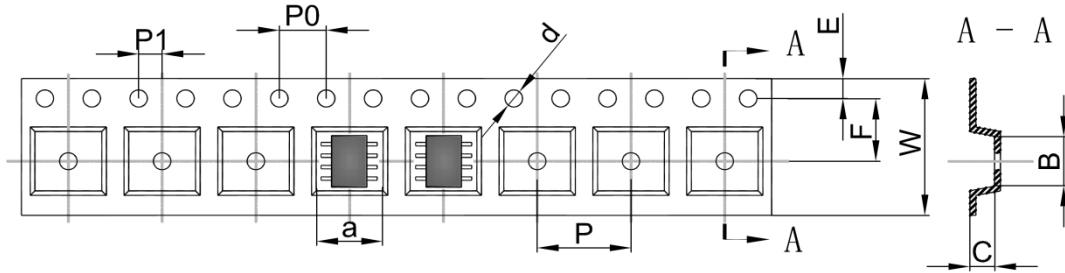
Note:

1. Controlling dimension: in millimeters
2. General tolerance: ±0.05mm
3. The pad layout is for reference purposes only

MOSFET (P-CHANNEL)

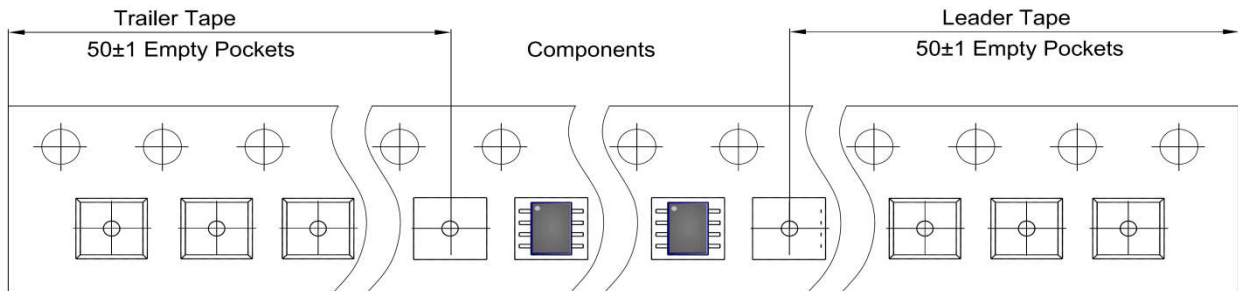
SOP-8 Tape and Reel

SOP-8 Embossed Carrier Tape

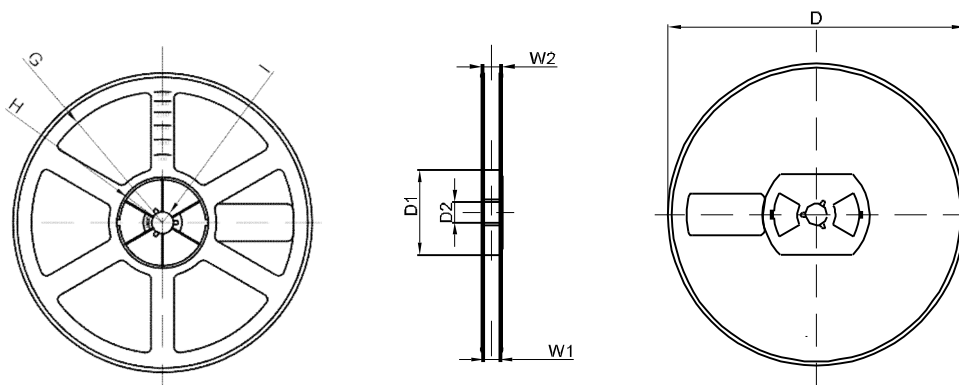


DIMENSIONS ARE IN MILLIMETER										
TYPE	A	B	C	d	E	F	P0	P	P1	W
SOP-8	6.40	5.40	2.10	Ø1.50	1.75	5.50	4.00	8.00	2.00	12.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

SOP-8 Tape Leader and Trailer



SOP-8 Reel



DIMENSIONS ARE IN MILLIMETER								
REEL OPTION	D	D1	D2	G	H	I	W1	W2
13" DIA	Ø330.00	100.00	13.00	R151.00	R56.00	R6.50	12.40	17.60
TOLERANCE	±2	±1	±1	±1	±1	±1	±1	±1