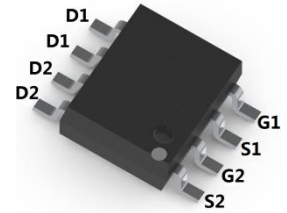


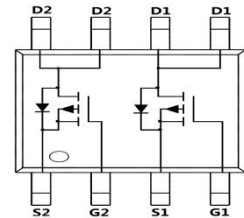
Dual P-Channel Enhancement Mode Field Effect Transistor

FEATURES

- Low on-resistance:  $V_{DS}=-30V, I_D=-5.1A, R_{DS(ON)} \leq 55m\Omega @ V_{GS}=-10V$
- Low gate charge
- For load switch or in PWM applications.
- Surface Mount device



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 noted)

Parameter	Symbol	Value	Unit
Drain-source voltage	$V_{DS}$	-30	V
Gate-source voltage	$V_{GS}$	$\pm 20$	V
Continuous drain current	$I_D$	-5.1	A
Pulsed drain current(Note 1)	$I_{DM}$	-20	A
Power dissipation	$P_D$	2.5	W
Thermal resistance from Junction to ambient (Note2)	$R_{\theta JA}$	50	$^\circ C/W$
Junction temperature	$T_J$	150	$^\circ C$
Storage temperature	$T_{STG}$	-55 ~ +150	$^\circ C$

ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ C$  unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
<b>Off Characteristics</b>						
Drain-Source breakdown voltage	$V_{(BR)DSS}$	-30	-33		V	$V_{GS}=0V, I_D=-250\mu A$
Zero gate voltage drain current	$I_{DSS}$			-1	$\mu A$	$V_{DS}=-24V, V_{GS}=0V$
Gate-body leakage current	$I_{GSS}$			$\pm 100$	nA	$V_{DS}=0V, V_{GS}=\pm 20V$
<b>On Characteristics(Note3)</b>						
Gate-threshold voltage	$V_{GS(th)}$	-1.1	-1.6	-2.1	V	$V_{DS}=V_{GS}, I_D=-250\mu A$
Drain-source on-resistance	$R_{DS(ON)}$		43	55	m $\Omega$	$V_{GS}=-10V, I_D=-5.1A$
			62	90	m $\Omega$	$V_{GS}=-4.5V, I_D=-4.2A$
Forward transconductance	$g_{FS}$	4	7		S	$V_{DS}=-15V, I_D=-4.5A$
<b>Drain-Source Diode Characteristics(Note3)</b>						
Diode forward voltage	$V_{SD}$			-1.2	V	$I_S=-5.1A, V_{GS}=0V$
<b>Dynamic Characteristics (Note4)</b>						
Input capacitance	$C_{iss}$		520		pF	$V_{DS}=-15V, V_{GS}=0V, f=1MHz$
Output capacitance	$C_{oss}$		130		pF	
Reverse transfer capacitance	$C_{rss}$		70		pF	
<b>Switching Characteristics (Note 4)</b>						
Total gate charge	$Q_g$		11		nC	$V_{GS}=-10V, V_{DS}=-15V, I_D=-5.1A$
Gate-source charge	$Q_{gs}$		2.2		nC	
Gate-drain charge	$Q_{gd}$		3		nC	
Turn-on delay time	$t_{d(on)}$		7		nS	$V_{GS}=-10V, V_{DD}=-15V, R_{GEN}=6\Omega, I_D=-1A$
Turn-on rise time	$t_r$		13		nS	
Turn-off delay time	$t_{d(off)}$		14		nS	
Turn-off fall time	$t_f$		9		nS	

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board,  $t \leq 10$  sec.
3. Pulse Test: Pulse Width  $\leq 300 \mu s$ , Duty Cycle  $\leq 2\%$ .
4. Guaranteed by design, not subject to production

Dual P-Channel Enhancement Mode Field Effect Transistor

Typical Electrical and Thermal Characteristics

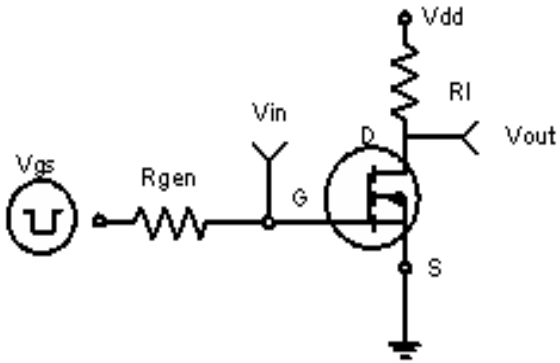


Figure 1: Switching Test Circuit

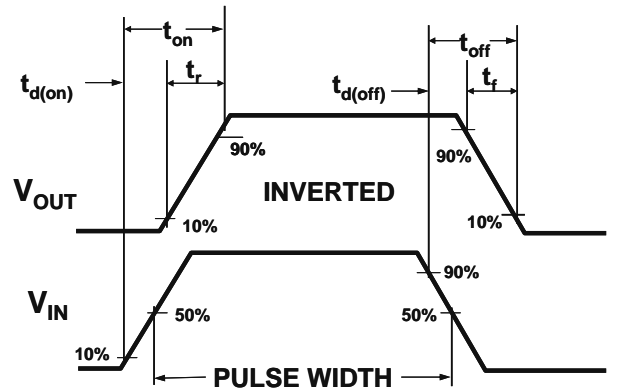


Figure 2: Switching Waveforms

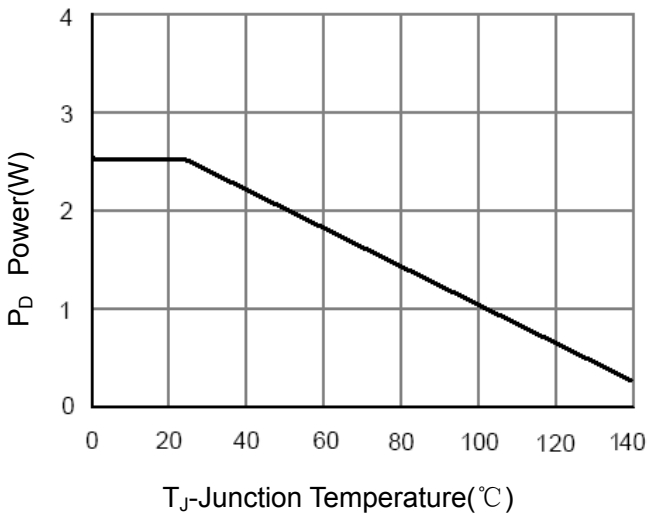


Figure 3 Power Dissipation

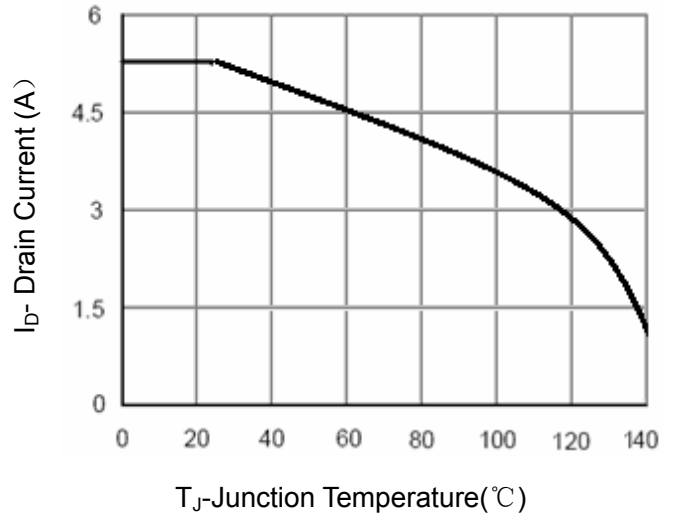


Figure 4 Drain Current

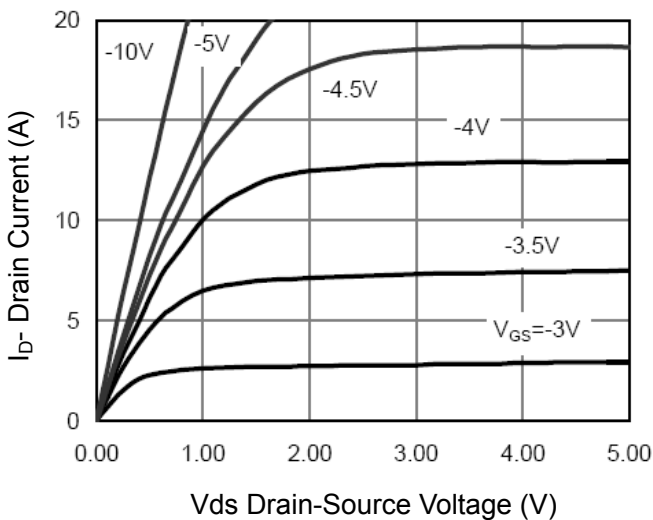


Figure 5 Output Characteristics

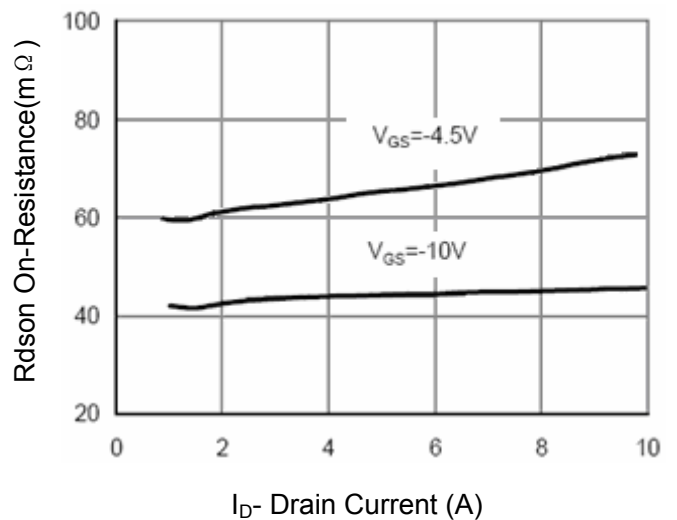


Figure 6 Drain-Source On-Resistance

Dual P-Channel Enhancement Mode Field Effect Transistor

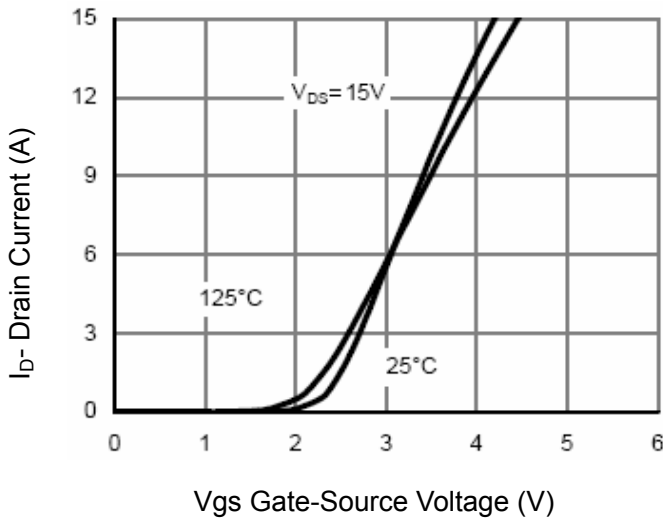


Figure 7 Transfer Characteristics

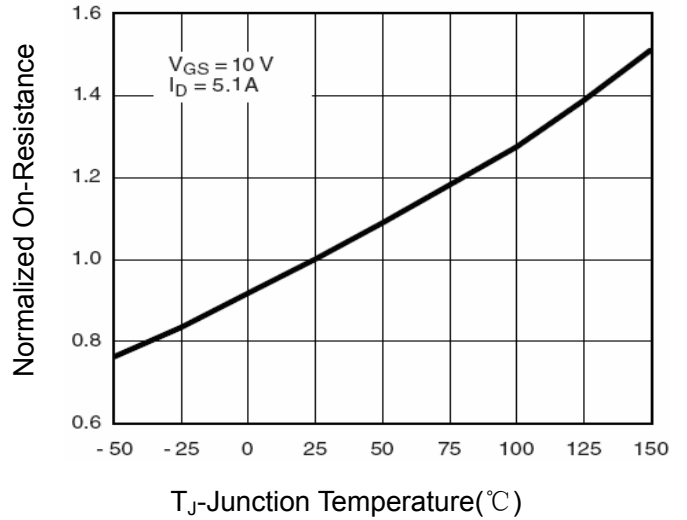


Figure 8 Drain-Source On-Resistance

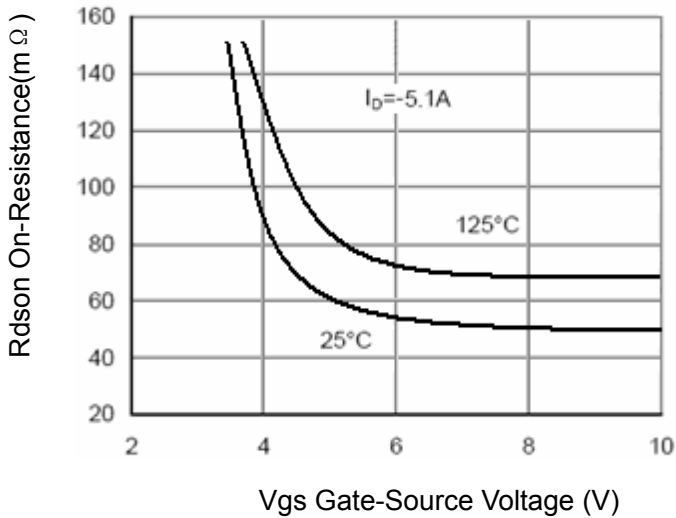


Figure 9  $R_{DS(on)}$  vs  $V_{GS}$

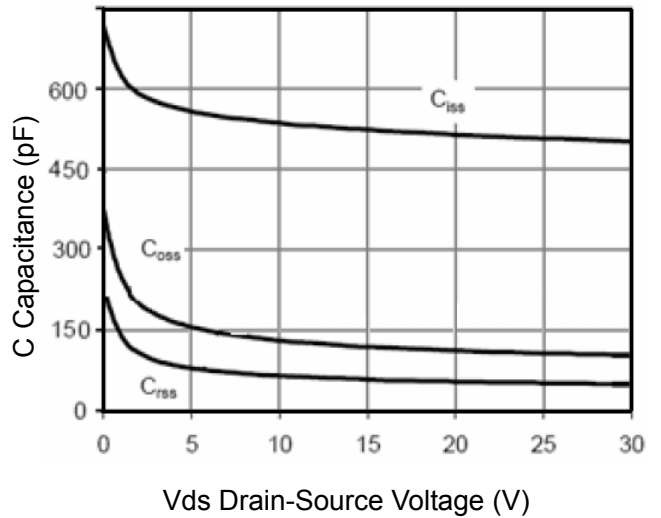


Figure 10 Capacitance vs  $V_{DS}$

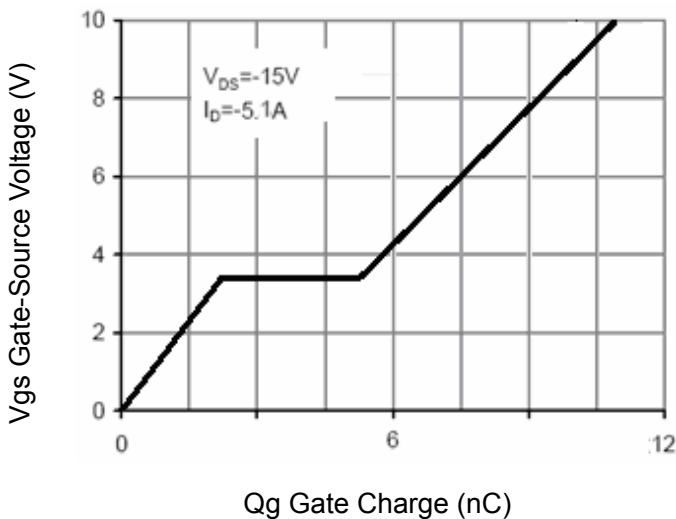


Figure 11 Gate Charge

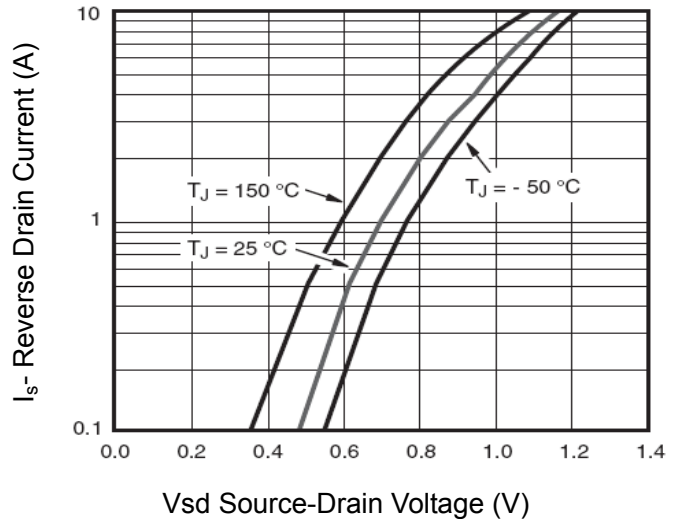


Figure 12 Source- Drain Diode Forward

Dual P-Channel Enhancement Mode Field Effect Transistor

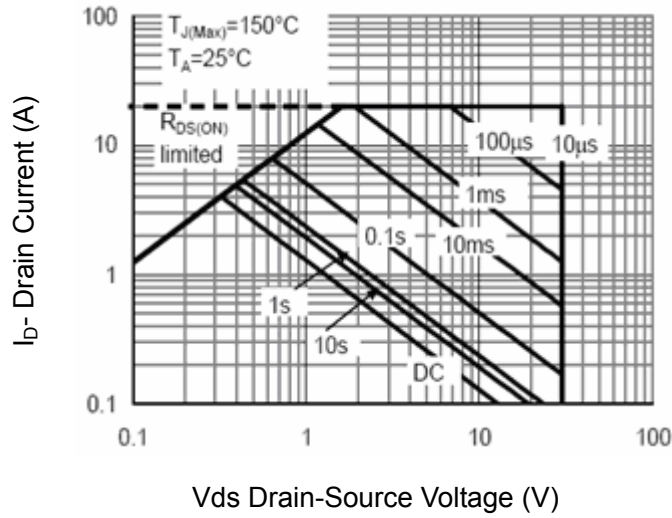


Figure 13 Safe Operation Area

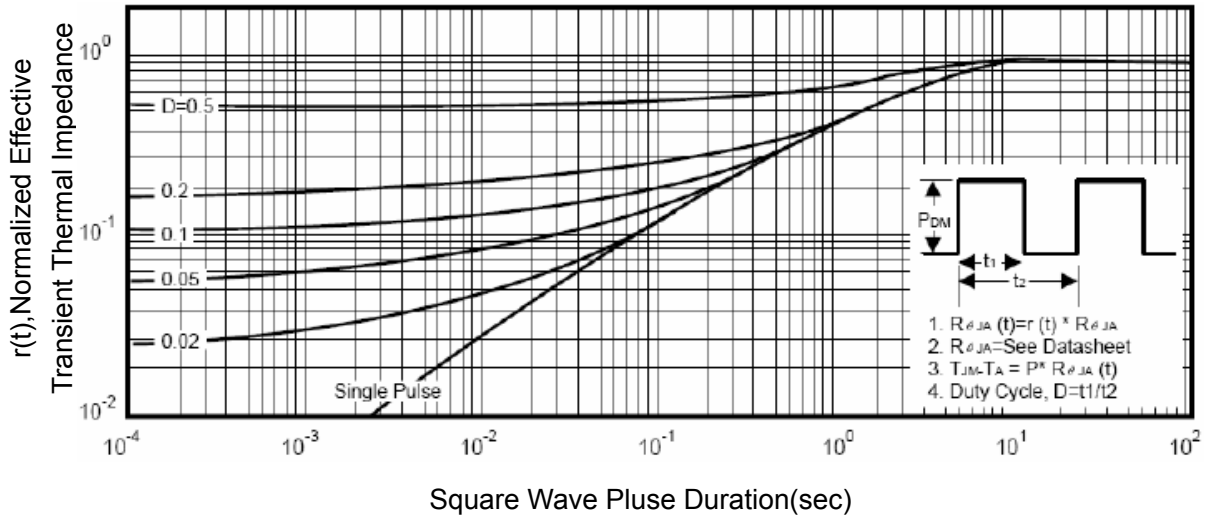
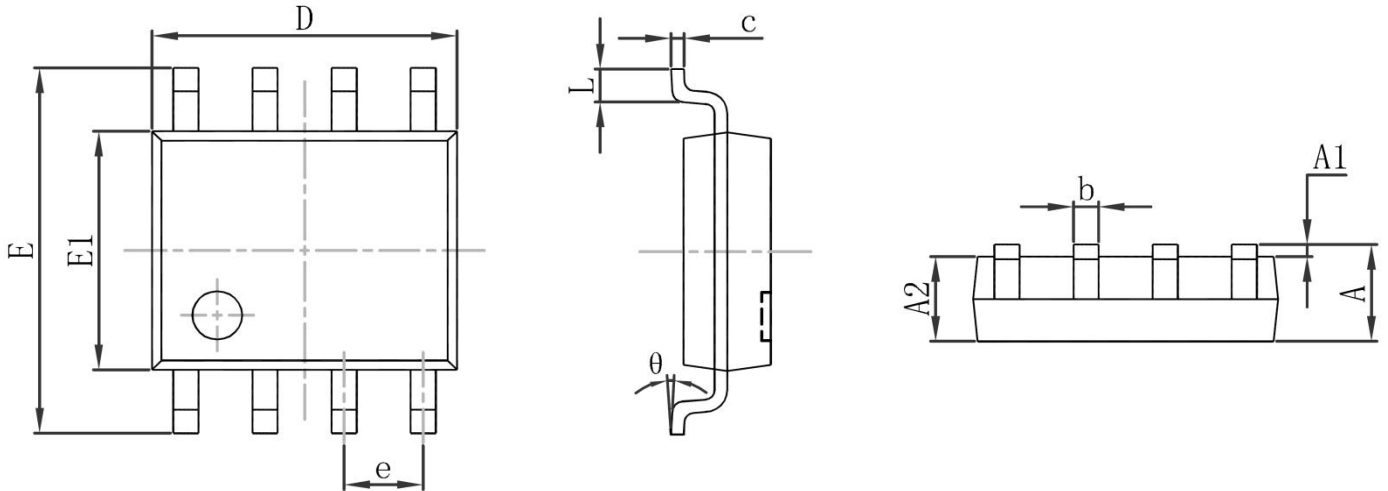


Figure 14 Normalized Maximum Transient Thermal Impedance

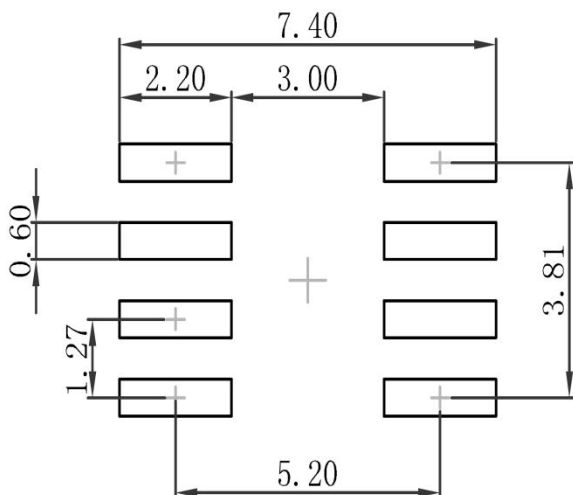
Dual P-Channel Enhancement Mode Field Effect Transistor

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



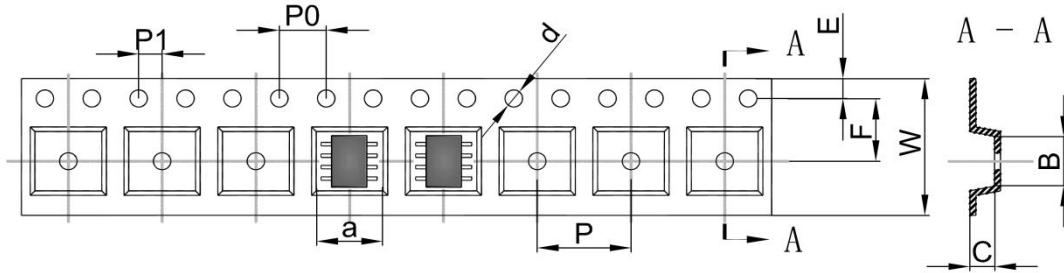
**Note:**

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

Dual P-Channel Enhancement Mode Field Effect Transistor

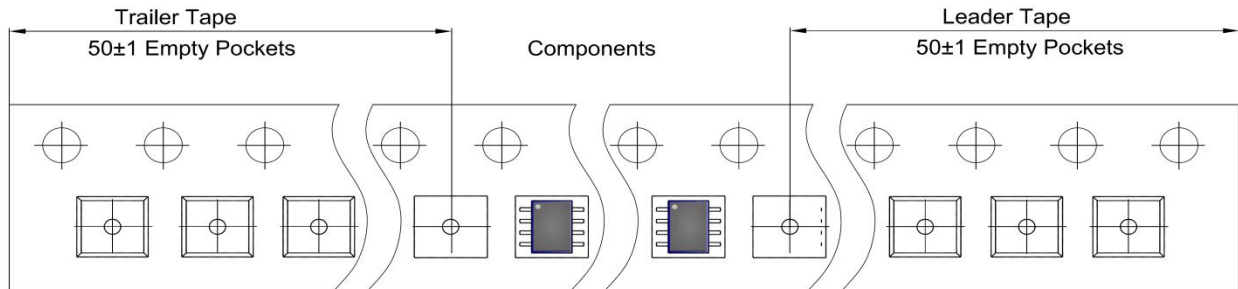
SOP-8 Tape and Reel

SOP-8 Embossed Carrier Tape

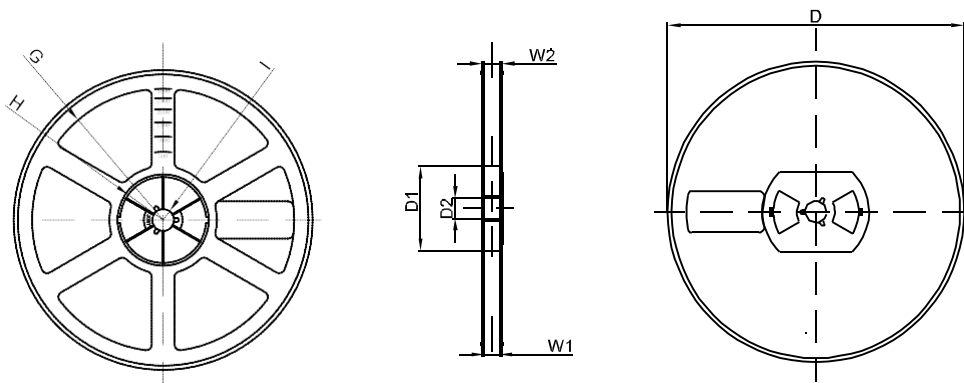


DIMENSIONS ARE IN MILLIMETER										
TYPE	A	B	C	d	E	F	P0	P	P1	W
SOP-8	6.40	5.40	2.10	Ø1.50	1.75	5.50	4.00	8.00	2.00	12.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

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