

Complementary Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ☒ Surface-mounted package
- ☒ Advanced trench cell design

1.2 Applications

- ☒ DC/DC Converter
- ☒ High-frequency Switching

1.3 Quick reference

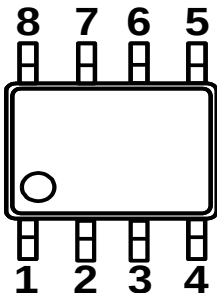
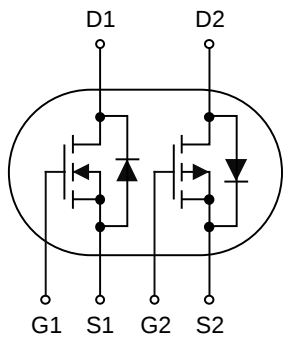
N-channel

- ☒ $BV \leq 40\text{ V}$
- ☒ $I_D \leq 8\text{ A}$
- ☒ $R_{DS(ON)} \leq 22\text{ m}\Omega @ V_{GS} = 10\text{ V}$
 $R_{DS(ON)} \leq 28\text{ m}\Omega @ V_{GS} = 4.5\text{ V}$

P-channel

- ☒ $BV \leq -40\text{ V}$
- ☒ $I_D \leq -6\text{ A}$
- ☒ $R_{DS(ON)} \leq 42\text{ m}\Omega @ V_{GS} = -10\text{ V}$
 $R_{DS(ON)} \leq 50\text{ m}\Omega @ V_{GS} = -4.5\text{ V}$

2. Pin Description

Pin	Description	Simplified Outline	Symbol
1	Source(S1)	 Top View SOP-8L	
2	Gate(G1)		
3	Source(S2)		
4	Gate(G2)		
5,6	Drain(D2)		
7,8	Drain(D1)		

3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
N-channel					
V _{DS}	Drain-Source Voltage	T _A =25°C	-	40	V
V _{GS}	Gate-Source Voltage	T _A =25°C	-	±20	V
I _D *	Drain Current	T _A =25°C, V _{GS} =10V	-	8	A
		T _A =75°C, V _{GS} =10V	-	6.4	A
I _{DM} *,**	Pulsed Drain Current	T _A =25°C, V _{GS} =10V	-	32	A
P _{tot}	Total Power Dissipation	T _A =25°C	-	2	W
		T _A =75°C	-	1.3	W
P-channel					
V _{DS}	Drain-Source Voltage	T _A =25°C	-	-40	V
V _{GS}	Gate-Source Voltage	T _A =25°C	-	±20	V
I _D *	Drain Current	T _A =25°C, V _{GS} =-10V	-	-6	A
		T _A =75°C, V _{GS} =-10V	-	-4.8	A
I _{DM} *,**	Pulsed Drain Current	T _A =25°C, V _{GS} =-10V	-	-24	A
P _{tot}	Total Power Dissipation	T _A =25°C	-	2	W
		T _A =75°C	-	1.3	W
T _J , T _{stg}	Operating Junction and Storage Temperature		- 55	150	°C
R _{θJA} *	Thermal Resistance- Junction to Ambient		-	62.5	°C/W
R _{θJC} *	Thermal Resistance from Junction to Case		-	50	°C/W

Notes :

* Surface Mounted on 1 in² pad area, $t \leq 10$ sec

** Pulse width $\leq 300 \mu\text{s}$, duty cycle $\leq 2\%$

4. Marking Information

Product Name	Marking
KJ4719S	4719 YYWW

5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
KJ4719S	SOP8	7 inch	-	4000	

Note: KUAJIEXIN defines "Green" as lead-free (RoHS compliant) and halogen free (Br or Cl does not exceed 900 ppm by weight in homogeneous material and total of Br and Cl does not exceed 1500 ppm by weight; Follow IEC 61249-2-21 and IPC/JEDEC J-STD-020C)

6. Electrical Characteristics (T_A=25°C Unless Otherwise Noted)

N-channel:

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	40	-	-	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	1.0	1.5	2.2	V
I _{DSS}	Zero Gate Voltage Source Current	V _{DS} =40V, V _{GS} =0V	-	-	1	μA
I _{GSS}	Gate Leakage Current	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
R _{DS(ON)} ^a	Drain-Source On-State Resistance	V _{GS} =10V, I _D =8A	-	17	22	mΩ
		V _{GS} =4.5V, I _D =6A	-	22	28	
g _{fs} ^a	Forward transconductance	V _{DS} =5V, I _D =8A	-	12	-	S
Diode Characteristics						
V _{SD} ^a	Diode Forward Voltage	I _{SD} =1A, V _{GS} =0V	-	0.75	1.2	V
Dynamic Characteristics ^b						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =20V Frequency=1MHz	-	715	-	pF
C _{oss}	Output Capacitance		-	62	-	
C _{rss}	Reverse Transfer Capacitance		-	48	-	
t _{d(on)}	Turn-on Delay Time	V _{DS} =20V, V _{GEN} =10V, R _G =3Ω, R _L =.6Ω, I _D =8A	-	8.4	-	ns
t _r	Turn-on Rise Time		-	3.0	-	
t _{d(off)}	Turn-off Delay Time		-	27.7	-	
t _f	Turn-off Fall Time		-	3.8	-	
Gate Charge Characteristics ^b						
Q _g	Total Gate Charge	V _{DS} =20V, V _{GS} =10V, I _{DS} =8A	-	15	-	nC
Q _{gs}	Gate-Source Charge		-	2.1	-	
Q _{gd}	Gate-Drain Charge		-	3.5	-	

Notes:

- Pulse test; pulse width ≤ 300μs, duty cycle ≤ 2%
- Guaranteed by design, not subject to production testing

6. Electrical Characteristics (T_A=25°C Unless Otherwise Noted)

P-channel:

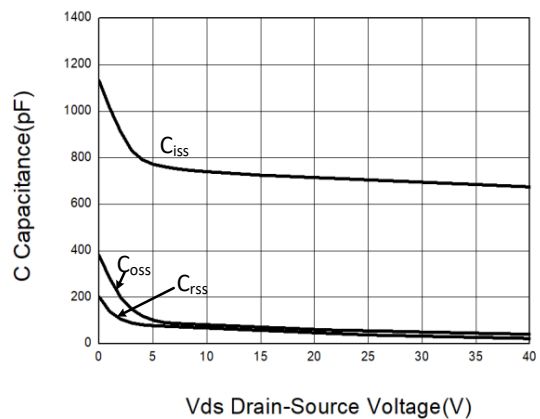
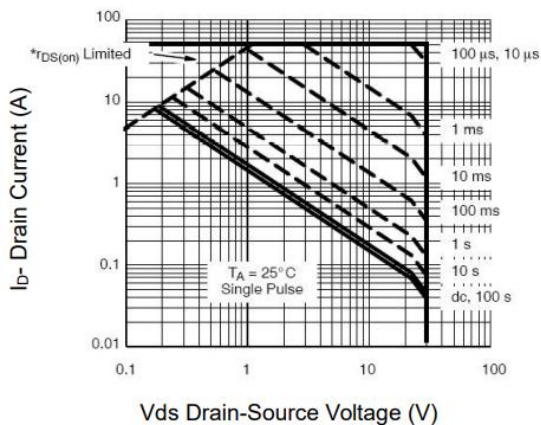
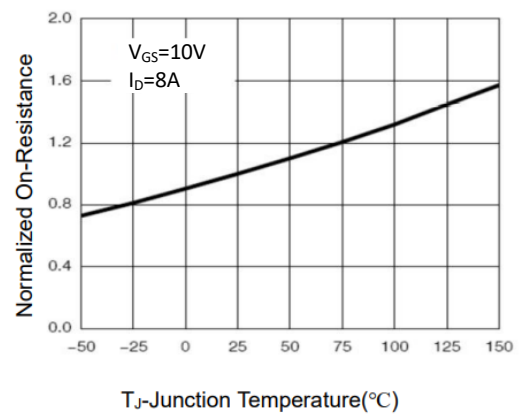
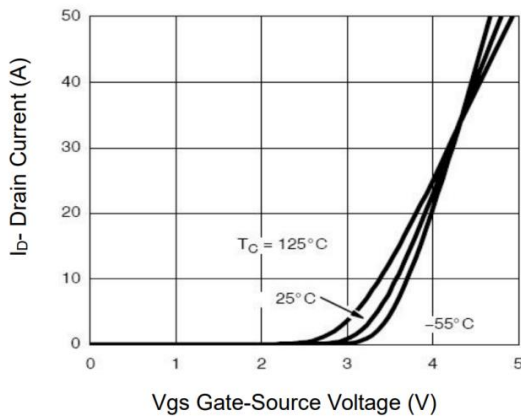
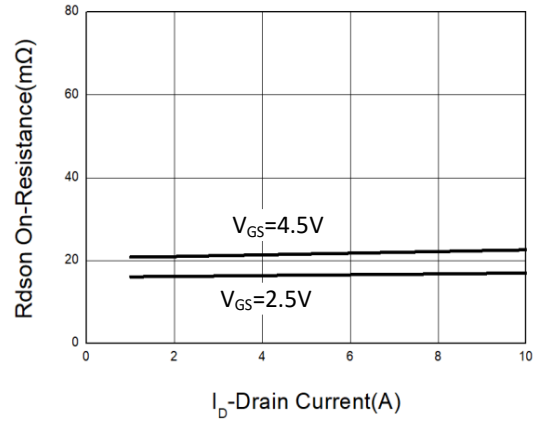
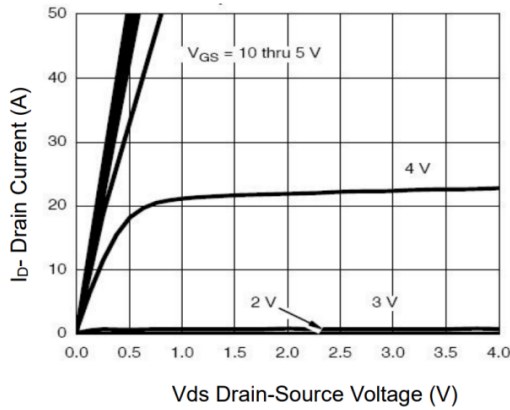
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =-250μA	-40	-	-	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =-250μA	-1.0	-1.5	-2.0	V
I _{DSS}	Drain Leakage Current	V _{DS} =-40V, V _{GS} =0V	-	-	-1.0	μA
I _{GSS}	Gate Leakage Current	V _{GS} =0V, V _{GS} =±20V	-	-	±100	nA
R _{DS(ON)} ^a	On-State Resistance	V _{GS} =-10V, I _{DS} =-6A	-	33	42	mΩ
		V _{GS} =-4.5V, I _{DS} =-4A	-	41	50	
g _{fs} ^a	Forward transconductance	V _{DS} =5V, I _D =-1A	-	11	-	S
Diode Characteristics						
V _{SD} ^a	Diode Forward Voltage	I _{SD} =-1A, V _{GS} =0V	-	0.78	-1.2	V
Dynamic Characteristics ^b						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-20V Frequency=1MHz	-	1022	-	pF
C _{oss}	Output Capacitance		-	105	-	
C _{rss}	Reverse Transfer Capacitance		-	80	-	
t _{d(on)}	Turn-on Delay Time	V _{DS} =-20V, V _{GEN} =-10V, R _G =3Ω, R _L =3.6Ω, I _{DS} =-6A	-	8	-	ns
t _r	Turn-on Rise Time		-	15	-	
t _{d(off)}	Turn-off Delay Time		-	22	-	
t _f	Turn-off Fall Time		-	9	-	
Gate Charge Characteristics ^b						
Q _g	Total Gate Charge	V _{DS} =-20V, V _{GS} =-10V, I _{DS} =-6A	-	19.5	-	nC
Q _{gs}	Gate-Source Charge		-	3.4	-	
Q _{gd}	Gate-Drain Charge		-	4.1	-	

Notes:

- Pulse test; pulse width ≤ 300μs, duty cycle ≤ 2%
- Guaranteed by design, not subject to production testing

8. Typical Characteristics

N-channel:



8. Typical Characteristics (Cont.)

N-channel:

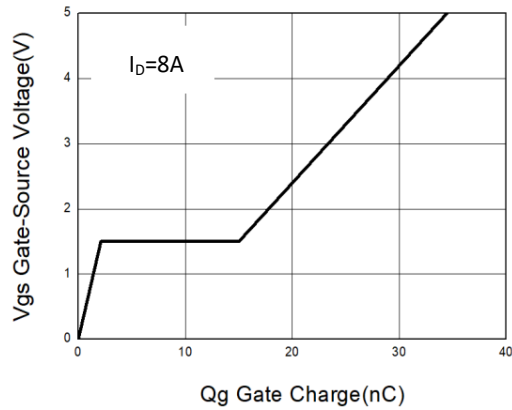


Fig.7 Gate-Charge Characteristic

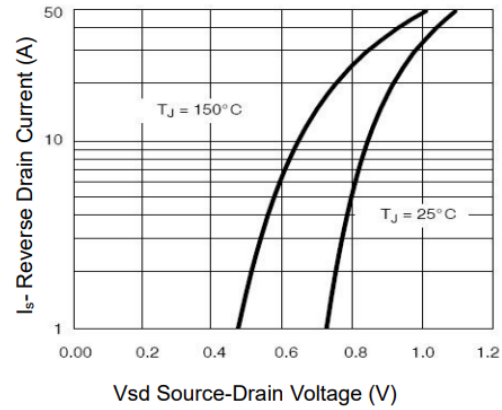


Fig.8 Body Diode Characteristic

P-channel:

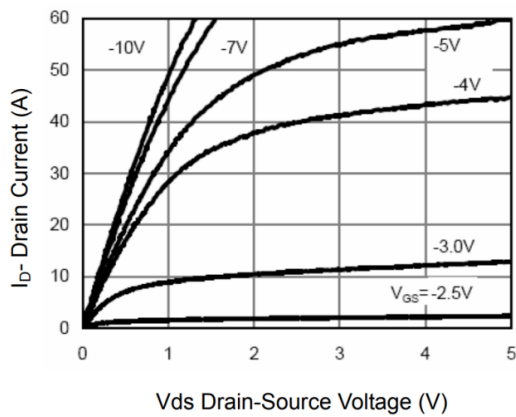


Fig.9 Output Characteristic

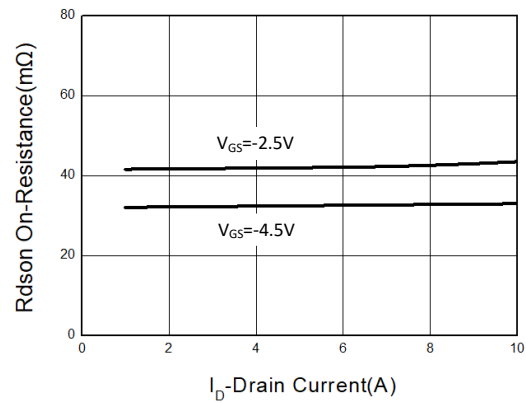


Fig.10 On-Resistance vs. Drain Current

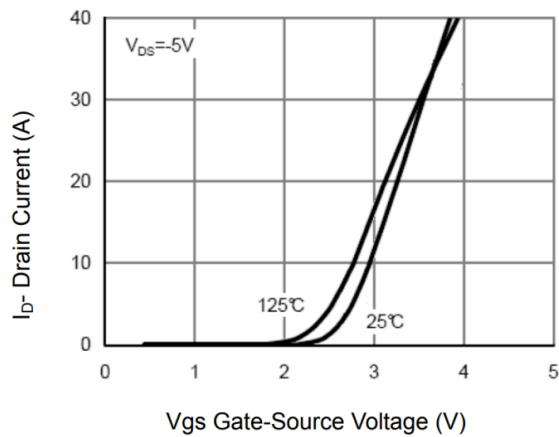


Fig.11 Transfer Characteristic

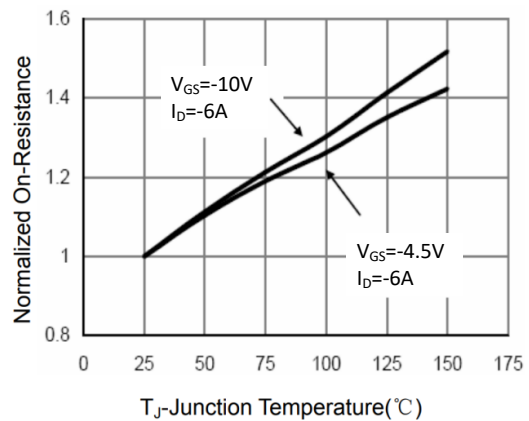


Fig.12 On-Resistance vs. Junction Temperature

8. Typical Characteristics (Cont.)

P-channel:

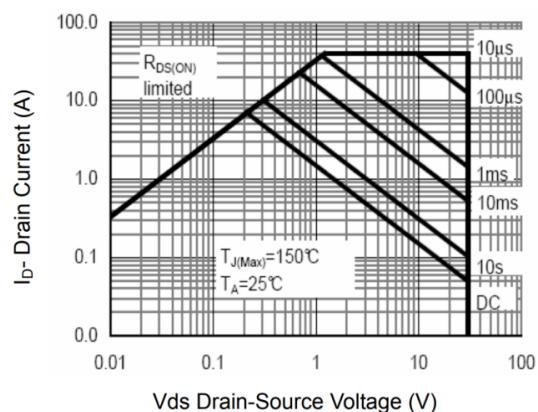


Fig.13 Safe Operation Area

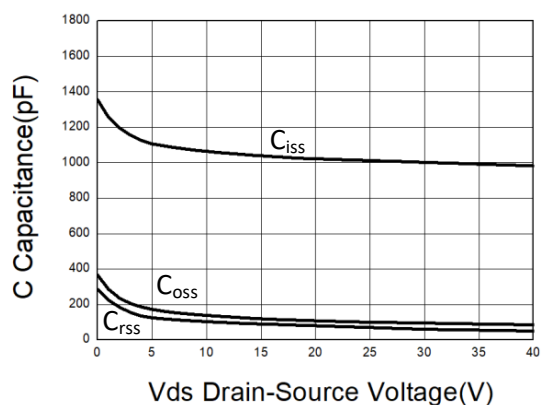


Fig.14 Capacitance Characteristic

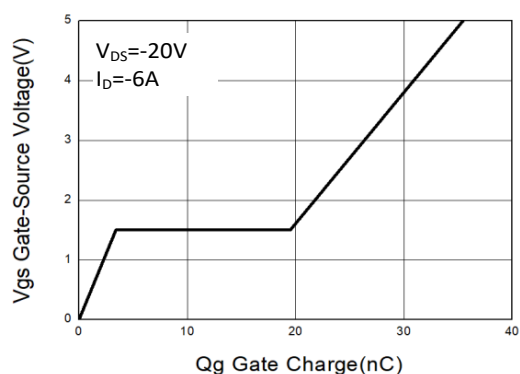


Fig.15 Gate-Charge Characteristic

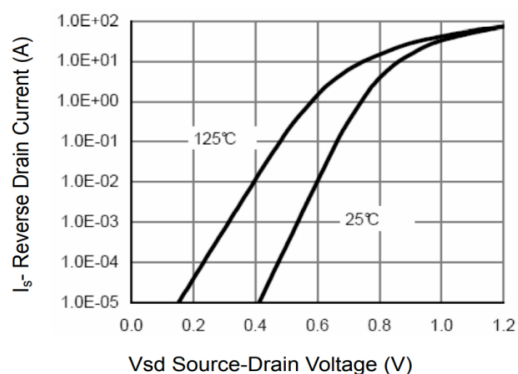
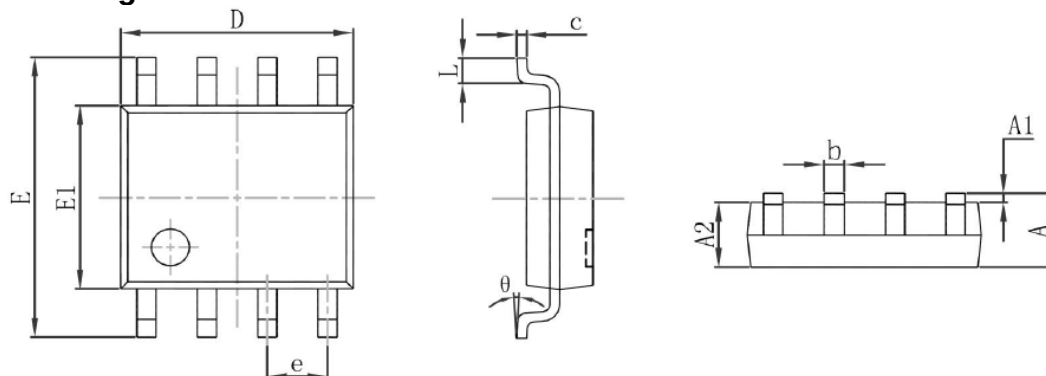


Fig.16 Body Diode Characteristic

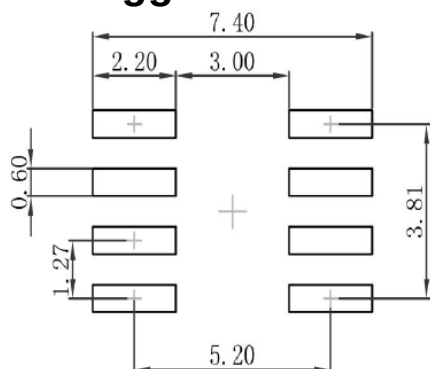
9. Package Dimensions

SOP8 Package



Symbol	Dimensions In Millimeters	
	MIN.	MAX.
A	1.350	1.750
A1	0.100	0.250
A2	1.350	1.550
b	0.300	0.510
c	0.170	0.250
D	4.800	5.000
E	5.800	6.200
E1	3.800	4.000
e	1.270 BSC	
L	0.400	1.270
θ	0°	8°

SOP-8 Suggested Pad Layout

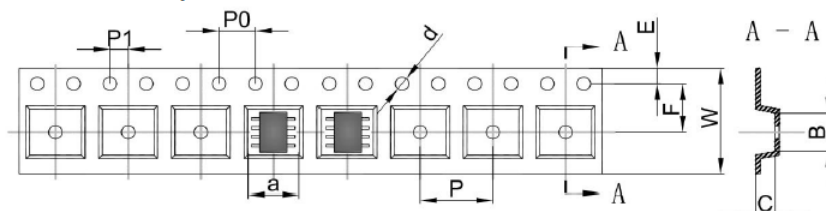


Note:

1. Controlling dimension: in millimeters
2. General tolerance: $\pm 0.05\text{mm}$
3. The pad layout is for reference purposes only

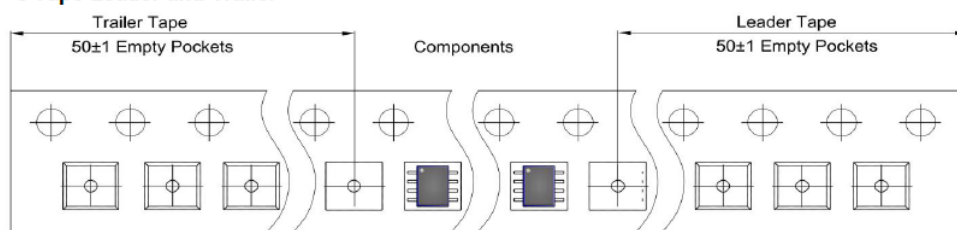
10. SOP-8 Tape and Reel

SOP-8 Embossed Carrier Tape

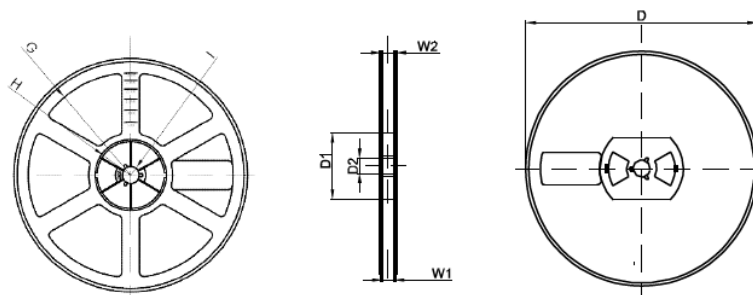


DIMENSIONS ARE IN MILLIMETER										
TYPE	A	B	C	d	E	F	P0	P	P1	W
SOP-8	6.40	5.40	2.10	Ø1.50	1.75	5.50	4.00	8.00	2.00	12.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

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