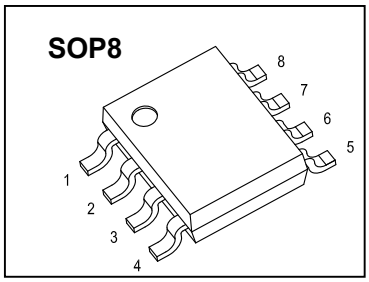
SOP8 Plastic-Encapsulate MOSFETS

ZSQ6601 P-channel and N-channel Complementary MOSFETS



DESCRIPTIONS

The Device uses advanced trench technology to provide excellent $R_{DS(ON)}$ and low gate charge. The complementary MOSFETs form a high-speed power inverter, suitable for a multitude of applications.

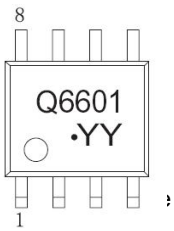
FEATURES

- Including a N-ch CJ3400 MOS and a P-ch ZS3401 MOS (independently) in a package
- Surface mount package
- Low $R_{DS(on)}$

APPLICATIONS

- Suitable for a multitude of applications.
- High-speed power inverter

MARKING:



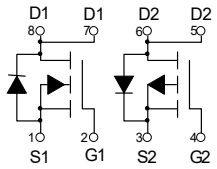
Q6601= Device code

Solid dot=Pin1 indicator

Solid dot = Green molding compound device, if none, the normal device

YY=Date Code

EQUIVALENT CIRCUIT



MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

Symbol	Parameter	Value		Unit
		N-ch MOS	P-ch MOS	
V_{DS}	Drain-Source Voltage	30	-30	V
V_{GS}	Gate-Source Voltage	±12	±12	V
I_D	Drain Current -Continuous(Note1)	5.8	-4.2	A
I_{DM}	Drain Current - Pulse(Note3)	23.2	-16.8	A
Power Dissipation, Temperature and Thermal Resistance				
P_D	Power Dissipation		1.4	W
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient		89	℃/W
T_j	Junction Temperature		150	℃
T_{stg}	Storage Temperature		-55~+150	℃
T_L	Lead Temperature		260	℃

N-channel MOSFET ELECTRICAL CHARACTERISTICS (T_a=25℃ unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
STATIC PARAMETERS						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} =0V, I_D=250μA	30			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =24V,V_{GS} = 0V			1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±12V, V_{DS} = 0V			±100	nA
Gate threshold voltage (note 1)	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	0.7		1.4	V
Drain-source on-resistance(note 1)	$R_{DS(on)}$	V_{GS} =10V, I_D =5.8A		19	35	mΩ
		V_{GS} =4.5V, I_D =5A		21	40	mΩ
		V_{GS} =2.5V, I_D =4A		26	52	mΩ
Forward transconductance(note 1)	g_{FS}	V_{DS} =5V, I_D =5A	8			S
Diode forward voltage(note 1)	V_{SD}	I_S=1A, V_{GS} = 0V			1	V
DYNAMIC PARAMETERS (note 2)						
Input Capacitance	C_{iss}	V_{DS} =15V,V_{GS} =0V,f =1MHz			1050	pF
Output Capacitance	C_{oss}			99		pF
Reverse Transfer Capacitance	C_{rss}			77		pF
SWITCHING PARAMETERS (note 2)						
Turn-on delay time	$t_{d(on)}$	V_{GS}=10V,V_{DS}=15V, R_L=2.7Ω,R_{GEN}=3Ω, I_D=0.5A			5	ns
Turn-on rise time	t_r				7	ns
Turn-off delay time	$t_{d(off)}$				40	ns
Turn-off fall time	t_f				6	ns

P-channel MOSFET ELECTRICAL CHARACTERISTICS (T_a=25℃ unless otherwise specified)

STATIC PARAMETERS						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} =0V, I_D=-250μA	-30			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =-24V,V_{GS} = 0V			-1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±12V, V_{DS} = 0V			±100	nA
Gate threshold voltage (note 1)	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-0.5		-1.3	V
Drain-source on-resistance (note 1)	$R_{DS(on)}$	V_{GS} =-10V, I_D =-4.2A			65	mΩ
		V_{GS} =-4.5V, I_D =-4A			75	mΩ
		V_{GS} =-2.5V, I_D =-1A			90	mΩ
Forward transconductance (note 1)	g_{FS}	V_{DS} =-5V, I_D =-5A	7			S
Diode forward voltage(note 1)	V_{SD}	I_S=-1A, V_{GS} = 0V			-1	V
DYNAMIC PARAMETERS (note 2)						
Input Capacitance	C_{iss}	V_{DS} =-15V,V_{GS} =0V,f =1MHz		954		pF
Output Capacitance	C_{oss}			115		pF
Reverse Transfer Capacitance	C_{rss}			77		pF
SWITCHING PARAMETERS (note 2)						
Turn-on delay time	$t_{d(on)}$	V_{GS}=-10V,V_{DS}=-15V, R_L=3.6Ω,R_{GEN}=6Ω, I_D=0.5A			6.3	ns
Turn-on rise time	t_r				3.2	ns
Turn-off delay time	$t_{d(off)}$				38.2	ns
Turn-off fall time	t_f				12	ns

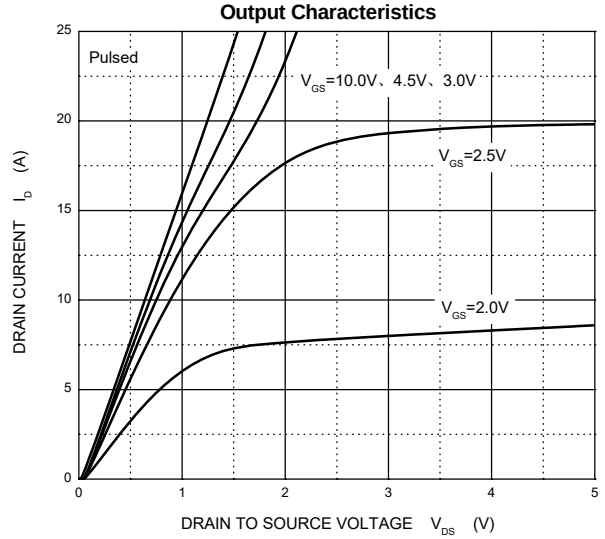
Note:

1、 Pulse test: pulse width =300μs, duty cycle≤ 2%

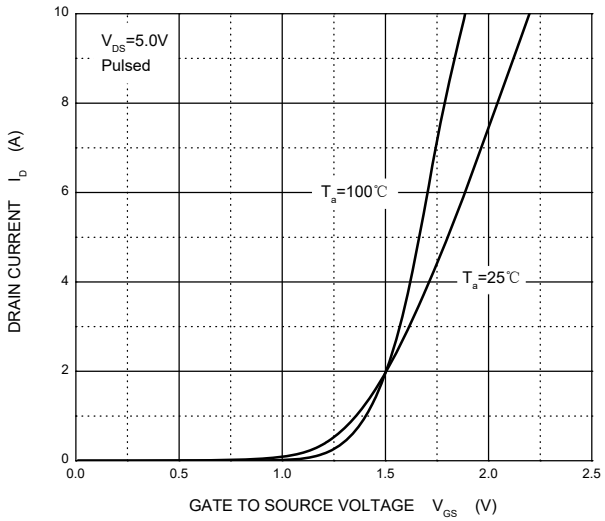
2、 These parameters have no way to verify.

N-channel MOSFET ELECTRICAL CHARACTERISTICS

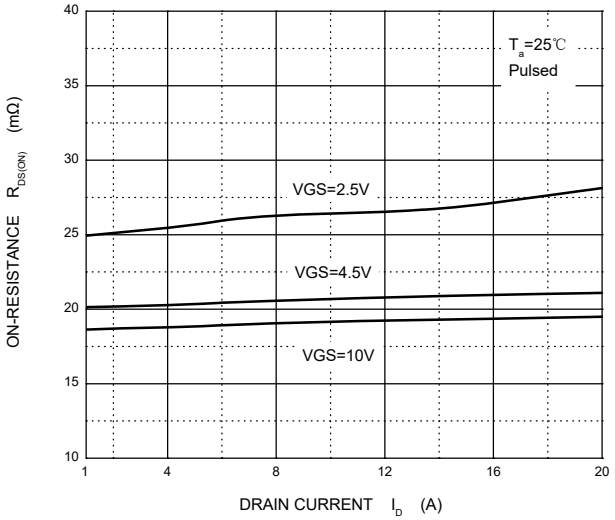
Output Characteristics



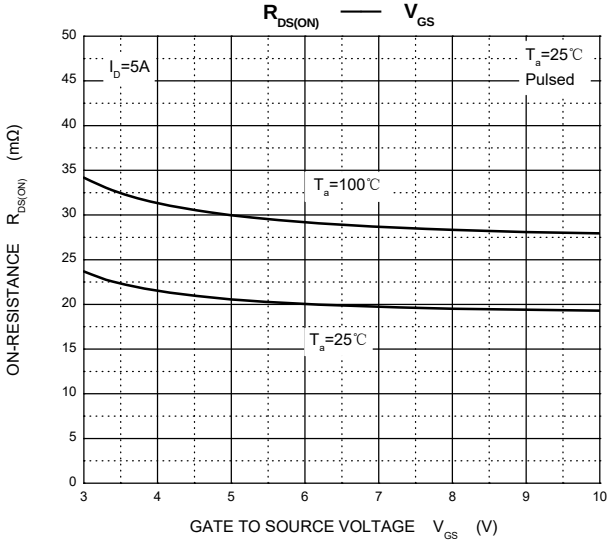
Transfer Characteristics



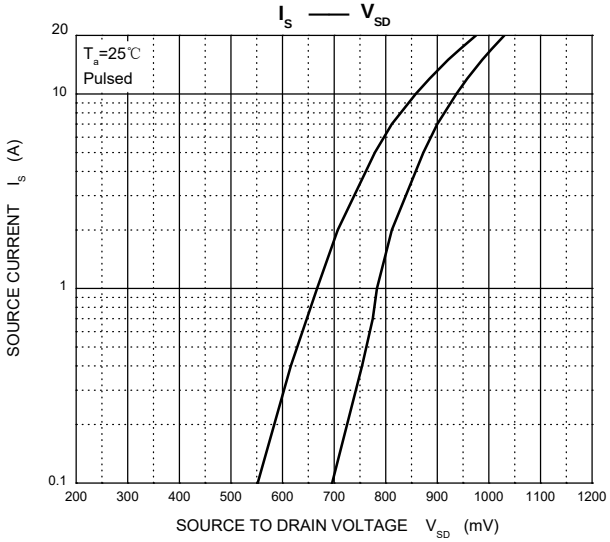
$R_{DS(ON)}$ —— I_D



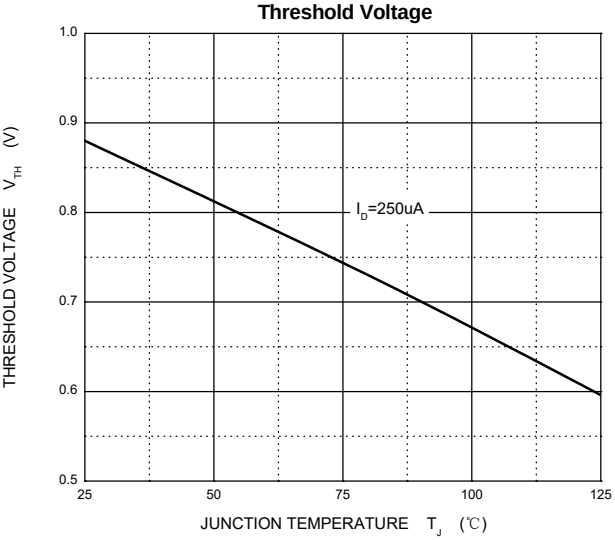
$R_{DS(ON)}$ —— V_{GS}



I_S —— V_{SD}

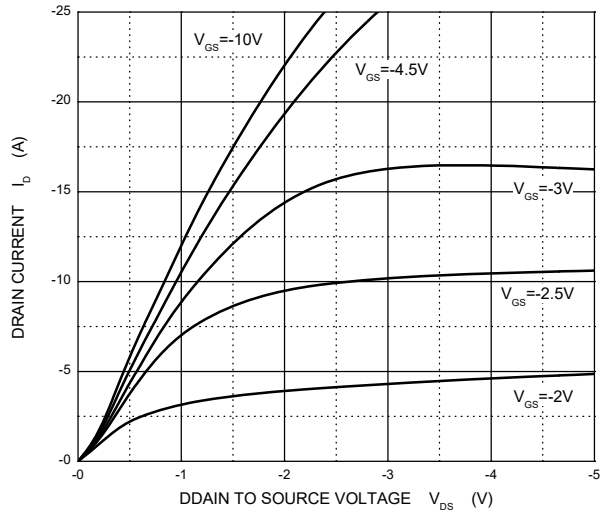


Threshold Voltage

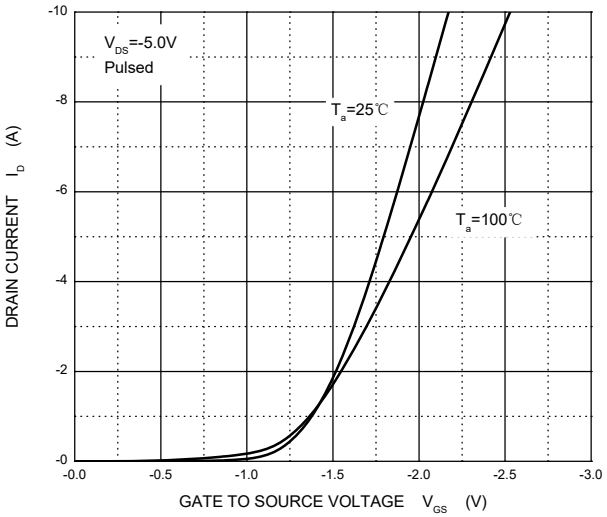


P-channel MOSFET ELECTRICAL CHARACTERISTICS

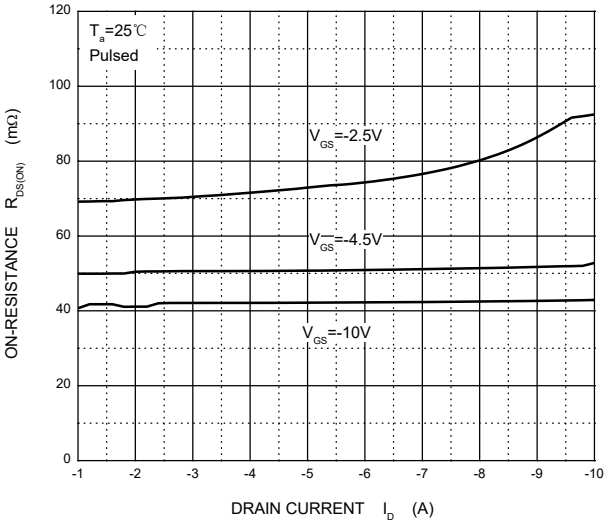
Output Characteristics



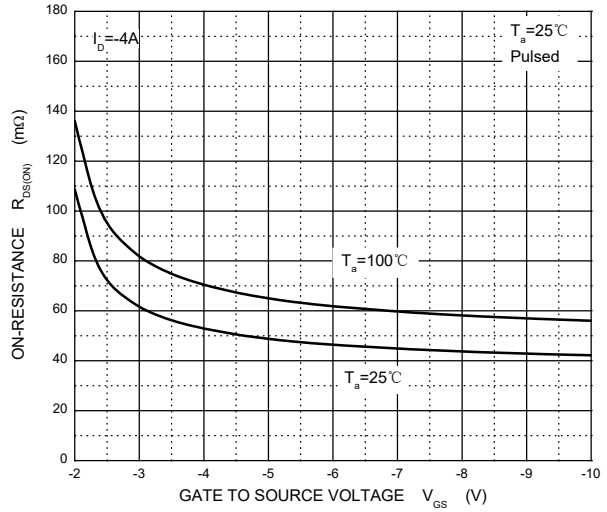
Transfer Characteristics



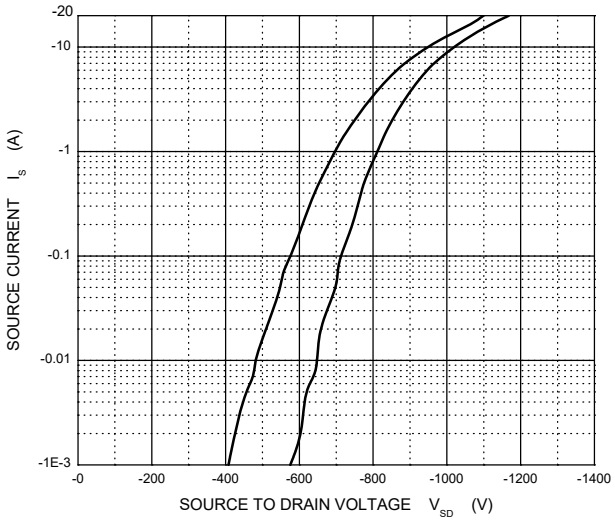
$R_{DS(ON)}$ —— I_D



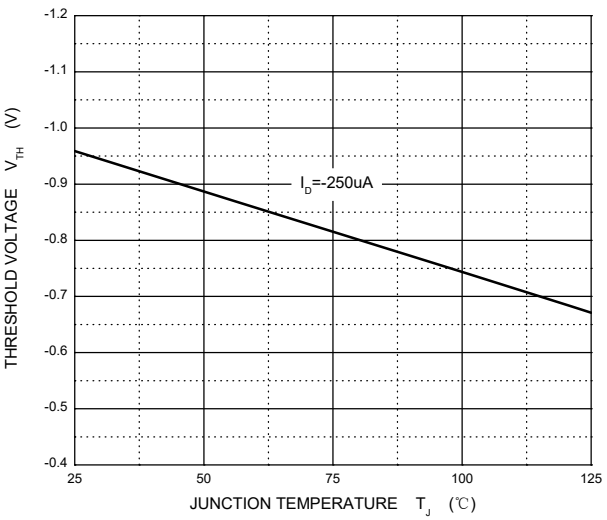
$R_{DS(ON)}$ —— V_{GS}



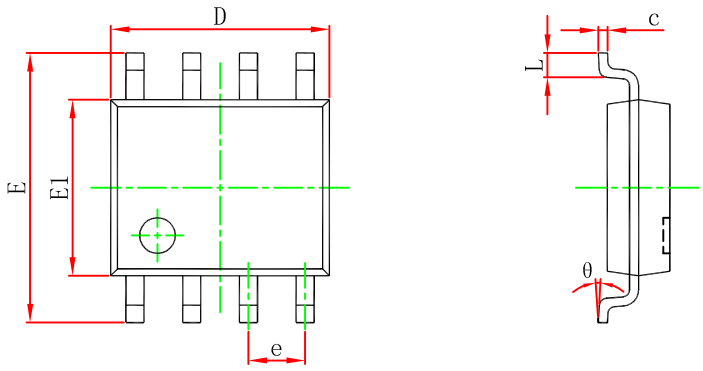
I_S —— V_{SD}

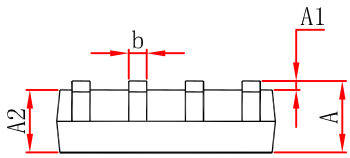


Threshold Voltage



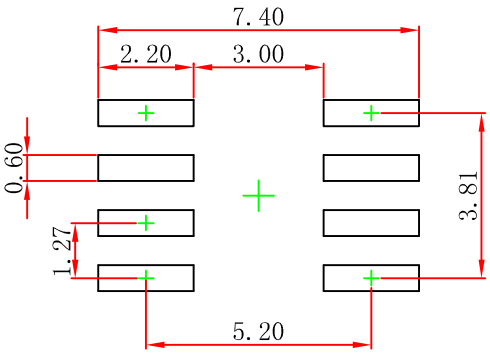
SOP8 Package Outline Dimensions





Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	**Max**	**Min**	**Max**
A	1.450	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	4.700	5.100	0.185	0.201
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°

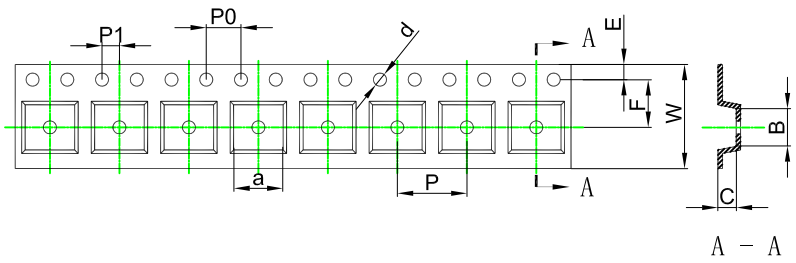
SOP8 Suggested Pad Layout



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

SOP8 Tape and Reel

SOP8 Embossed Carrier Tape



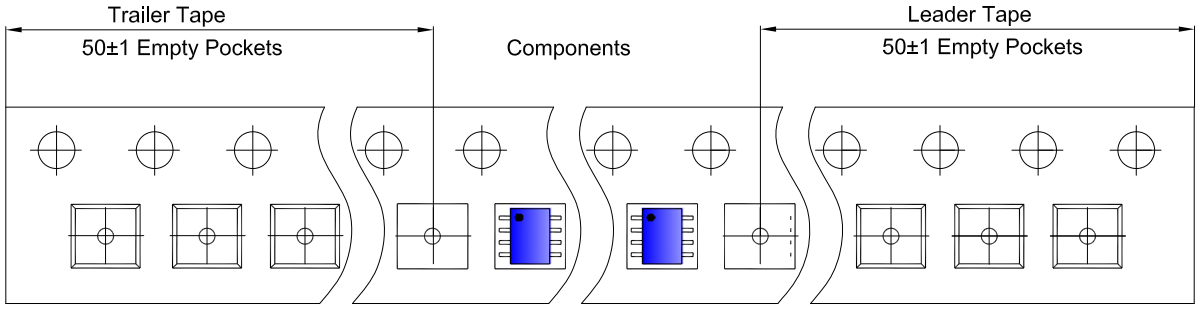
Packaging Description:

SOP8 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 4,000 units per 13" or 33cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

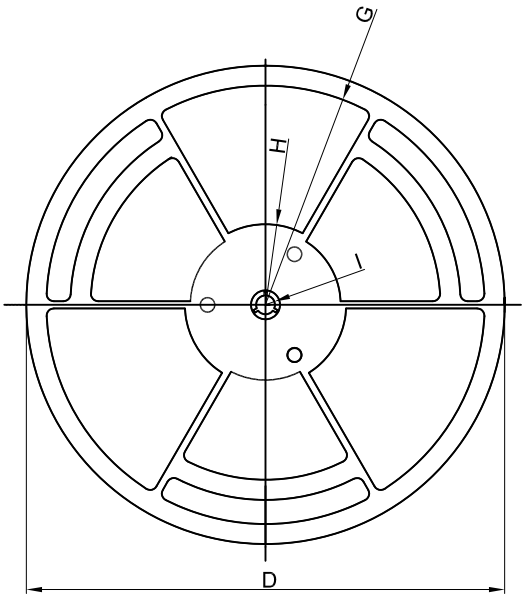
ALL DIM IN mm

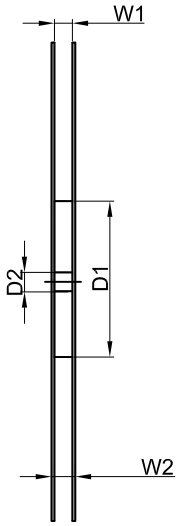
Dimensions are in millimeter										
Pkg type	a	B	C	d	E	F	P0	P	P1	W
SOP8	6.40	5.40	2.10	Ø1.50	1.75	5.50	4.00	8.00	2.00	12.00

SOP8 Tape Leader and Trailer



SOP8 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

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
4,000 pcs	13 inch	8,000 pcs	360×360×65	64,000 pcs	565×380×390	