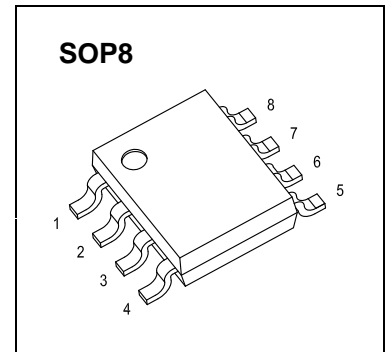




# SOP8 Plastic-Encapsulate MOSFETS

## ZSQ4824 Dual N-Channel MOSFET

$V_{(BR)DSS}$	$R_{DS(on)}$ TYP	$I_D$
30V	10.5mΩ@10V	10A
	14.5mΩ@4.5V	

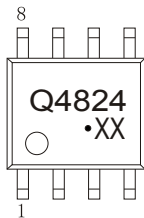


### DESCRIPTION

The ZSQ4824 uses advanced trench technology to provide excellent

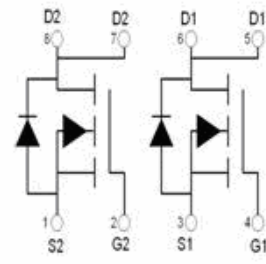
$R_{DS(ON)}$  and low gate charge. This device is suitable for use as a load switch or in PWM applications.

### MARKING:



Q4824 = Device code.  
 Solid dot = Green molding compound device,  
 if none, the normal device.  
 XX = Code.

### Equivalent Circuit



### Maximum ratings ( $T_a=25^\circ\text{C}$ 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 ( $t \leq 10\text{s}$ ) (note 1)	$I_D$	10	A
Pulsed Drain Current (note 2)	$I_{DM}$	28	A
Power Dissipation	$P_D$	1.25	W
Thermal Resistance from Junction to Ambient ( $t \leq 10\text{s}$ ) (note 1)	$R_{\theta JA}$	100	$^\circ\text{C/W}$
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-55~+150	$^\circ\text{C}$

# MOSFET ELECTRICAL CHARACTERISTICS

$T_a=25\text{ }^\circ\text{C}$  unless otherwise specified

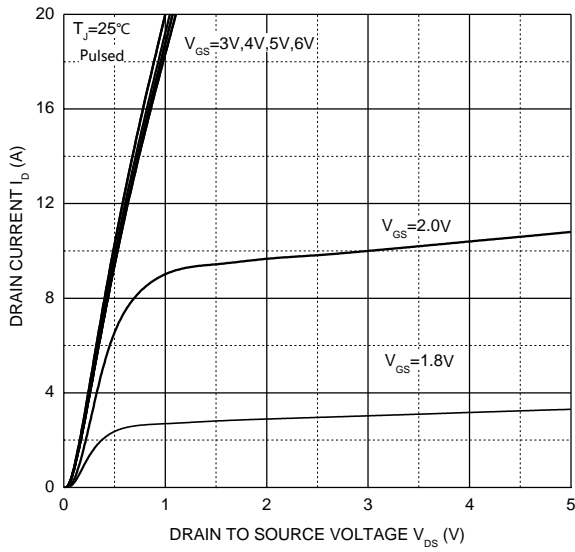
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>STATIC PARAMETERS</b>						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	30			V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = 30V, V_{GS} = 0V$			1	$\mu A$
Gate-body leakage current	$I_{GSS}$	$V_{GS} = \pm 20V, V_{DS} = 0V$			$\pm 100$	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.7	1.7	3.0	V
Drain-source on-resistance (note 3)	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 10A$		10.5	15	m $\Omega$
		$V_{GS} = 4.5V, I_D = 9A$		14.5	20	m $\Omega$
Forward transconductance (note 3)	$g_{FS}$	$V_{DS} = 5V, I_D = 5A$	15			S
Diode forward voltage (note 3)	$V_{SD}$	$I_S = 10A, V_{GS} = 0V$			0.85	V
<b>DYNAMIC PARAMETERS (note 4)</b>						
Input capacitance	$C_{iss}$	$V_{DS} = 15V, V_{GS} = 0V, f = 1MHz$		823		pF
Output capacitance	$C_{oss}$			138		pF
Reverse transfer capacitance	$C_{rss}$			100		pF
<b>SWITCHING PARAMETERS (note 4)</b>						
Total gate charge	$Q_g$	$V_{GS} = 10V, V_{DS} = 15V, I_D = 10A$		15		ns
Gate-source charge	$Q_{gs}$			4		ns
Gate-drain charge	$Q_{gd}$			5		ns
Turn-on delay time	$t_{d(on)}$	$V_{GS} = 10V, V_{DS} = 15V, R_L = 1.8\Omega, R_{GEN} = 3\Omega$			10	ns
Turn-on rise time	$t_r$				8	ns
Turn-off delay time	$t_{d(off)}$				32	ns
Turn-off fall time	$t_f$				6	ns

## Notes :

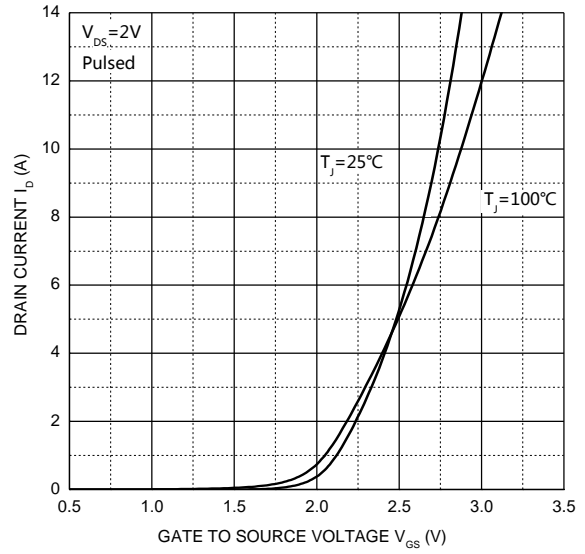
1. The value of  $R_{\theta JA}$  is measure with the device mounted on  $1in^2$  FR-4 board with 2oz. Copper, in a still air environment with  $T_a=25\text{ }^\circ\text{C}$ . The value in any given application depends on the user's specific board design. The current rating is based on the  $t \leq 10s$  thermal resistance rating.
2. Repetitive rating : Pulse width limited by junction temperature.
3. Pulse Test : Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .
4. Guaranteed by design, not subject to production testing.

# Typical Characteristics

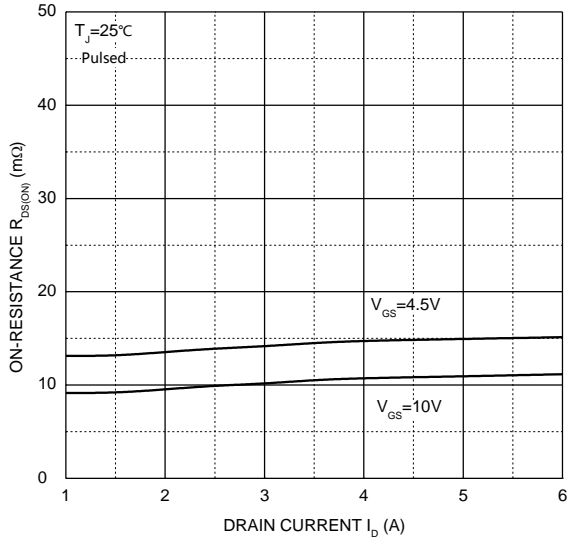
Output Characteristics



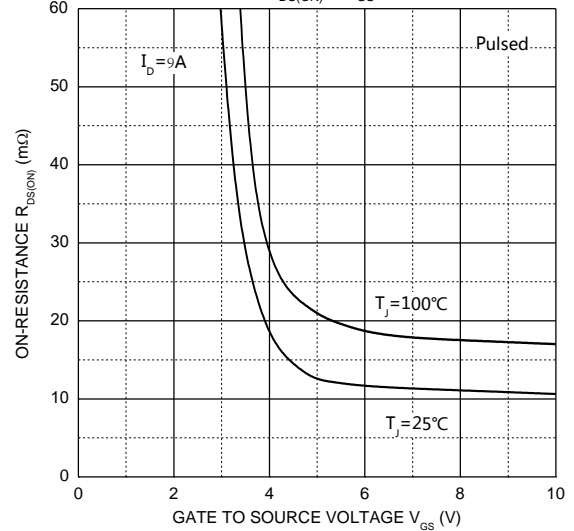
Transfer Characteristics



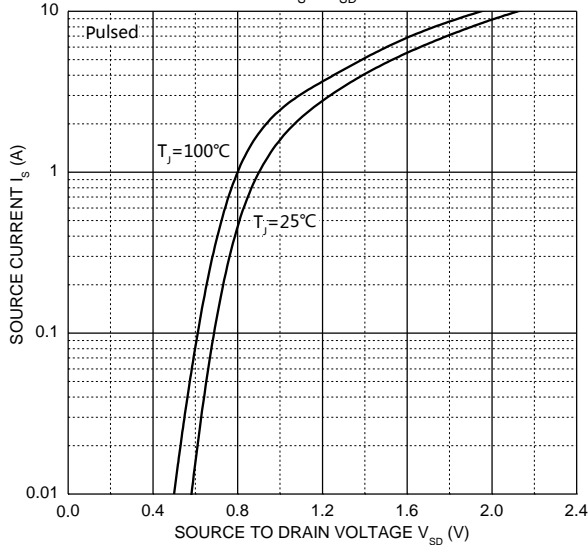
$R_{DS(ON)} - I_D$



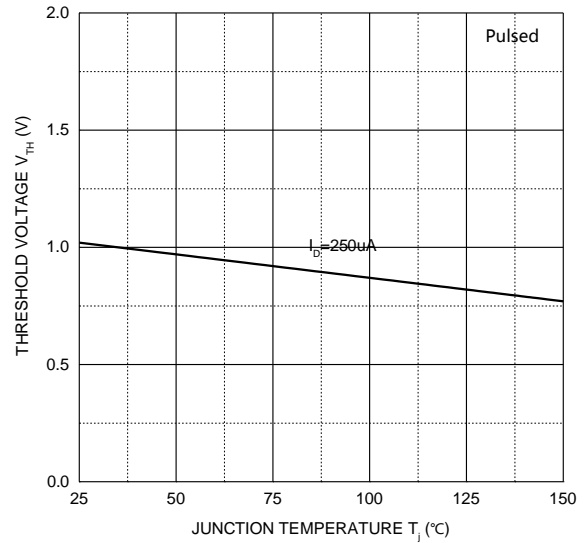
$R_{DS(ON)} - V_{GS}$



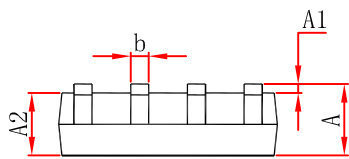
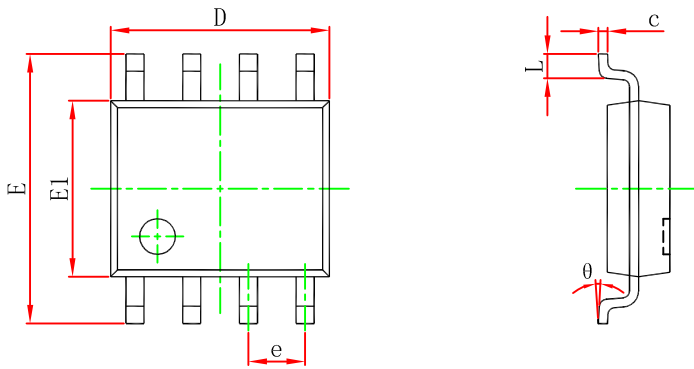
$I_S - V_{SD}$



Threshold Voltage

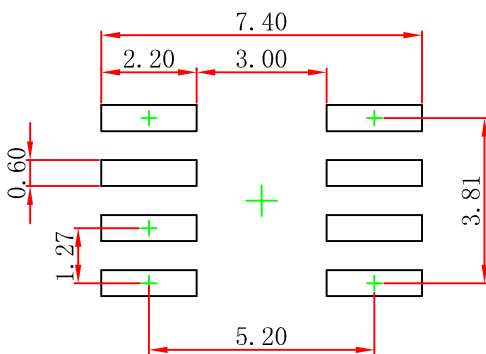


## SOP8 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	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°

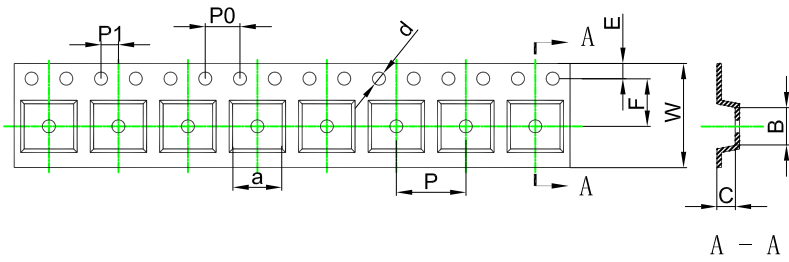
## SOP8 Suggested Pad Layout



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

# SOP8 Tape and Reel

## SOP8 Embossed Carrier Tape



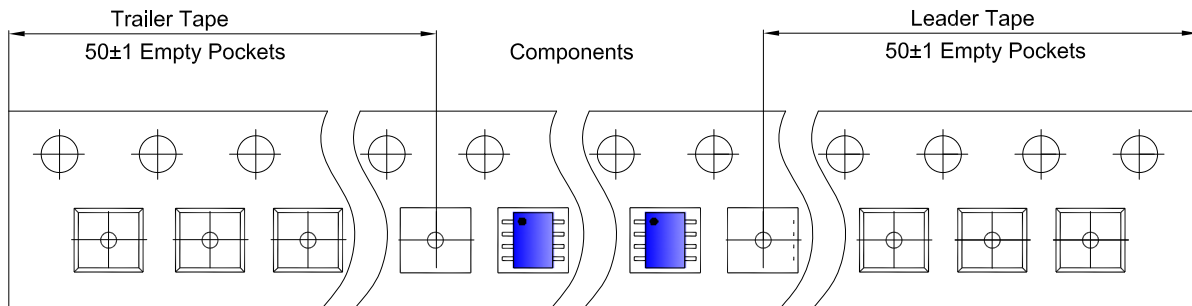
### Packaging Description:

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).

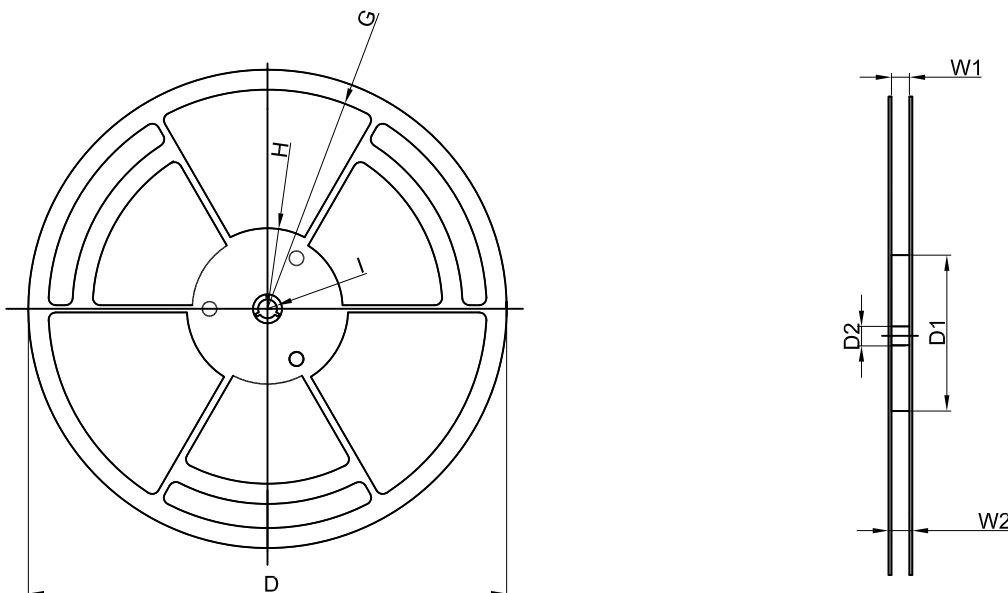
ALL DIM IN mm

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	