



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



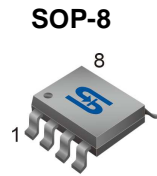
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**Pin Definition:**

- |           |          |
|-----------|----------|
| 1. Source | 8. Drain |
| 2. Source | 7. Drain |
| 3. Source | 6. Drain |
| 4. Gate   | 5. Drain |

**PRODUCT SUMMARY**

$V_{DS}$ (V)	$R_{DS(on)}$ (m $\Omega$ )	$I_D$ (A)
-30	5.2 @ $V_{GS} = -10V$	-17
	9.5 @ $V_{GS} = -4.5V$	

**Features**

- Advance Trench Process Technology
- High Density Cell Design for Ultra Low On-resistance

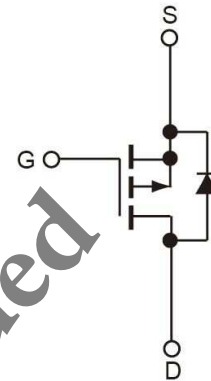
**Application**

- DC-DC Converter
- Battery Power System

**Ordering Information**

Part No.	Package	Packing
TSM4459CS RLG	SOP-8	2.5Kpcs / 13" Reel

**Note:** "G" denote for Halogen Free Product

**Block Diagram**


P-Channel MOSFET

**Absolute Maximum Rating** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	$V_{DS}$	-30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	-17	A
		-13.6	
Pulsed Drain Current	$I_{DM}$	-68	A
Maximum Power Dissipation <sup>Note a.</sup>	$P_D$	2.5	W
		1.6	
Operating Junction Temperature	$T_J$	+150	$^\circ\text{C}$
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	- 55 to +150	$^\circ\text{C}$

**Thermal Performance**

Parameter	Symbol	Limit	Unit
Junction to Ambient Thermal Resistance <sup>Note a.</sup>	$R_{\theta JA}$	50	$^\circ\text{C/W}$

**Notes:**

a. The Device Surface Mounted on 1inch<sup>2</sup> FR4 Board with 2oz copper.

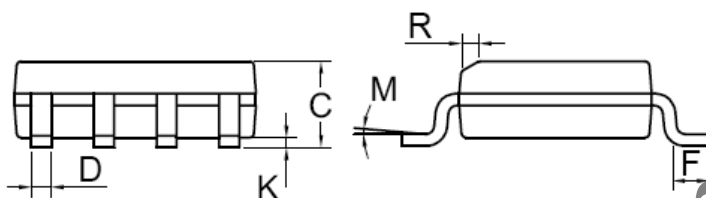
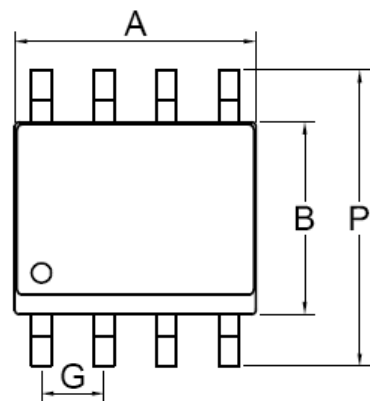
**Electrical Specifications** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = -250\mu A$	$BV_{DSS}$	-30	--	--	V
Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = -250\mu A$	$V_{GS(TH)}$	-1	--	-3	V
Gate Body Leakage	$V_{GS} = \pm 20V, V_{DS} = 0V$	$I_{GSS}$	--	--	$\pm 100$	nA
Zero Gate Voltage Drain Current	$V_{DS} = -30V, V_{GS} = 0V$	$I_{DSS}$	--	--	-1.0	$\mu A$
Drain-Source On-State Resistance <sup>a</sup>	$V_{GS} = -10V, I_D = -9A$	$R_{DS(ON)}$	--	4	5.2	m $\Omega$
	$V_{GS} = -4.5V, I_D = -9A$		--	7	9.5	
Diode Forward Voltage	$I_S = -18A, V_{GS} = 0V$	$V_{SD}$	--	0.8	--	V
Dynamic						
Total Gate Charge	$V_{DS} = -24V, I_D = -17A,$ $V_{GS} = -4.5V$	$Q_g$	--	78.4	--	nC
Gate-Source Charge		$Q_{gs}$	--	25.1	--	
Gate-Drain Charge		$Q_{gd}$	--	38.7	--	
Gate Resistance	$f = 1.0MHz$	$R_g$	--	2.88	--	$\Omega$
Input Capacitance	$V_{DS} = -15V, V_{GS} = 0V,$ $f = 1.0MHz$	$C_{iss}$	--	6205	--	pF
Output Capacitance		$C_{oss}$	--	963	--	
Reverse Transfer Capacitance		$C_{rss}$	--	330	--	
Switching						
Turn-On Delay Time	$V_{DD} = -15V, R_G = 15\Omega,$ $V_{GEN} = -10V,$ $R_G = 4.7\Omega$	$t_{d(on)}$	--	75.2	--	nS
Turn-On Rise Time		$t_r$	--	33.8	--	
Turn-Off Delay Time		$t_{d(off)}$	--	275	--	
Turn-Off Fall Time		$t_f$	--	92.1	--	

**Notes:**

a. pulse test:  $PW \leq 300\mu S$ , duty cycle  $\leq 2\%$

**SOP-8 Mechanical Drawing**



SOP-8 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX.
A	4.80	5.00	0.189	0.196
B	3.80	4.00	0.150	0.157
C	1.35	1.75	0.054	0.068
D	0.35	0.49	0.014	0.019
F	0.40	1.25	0.016	0.049
G	1.27 BSC		0.05 BSC	
K	0.10	0.25	0.004	0.009
M	0°	7°	0°	7°
P	5.80	6.20	0.229	0.244
R	0.25	0.50	0.010	0.019

Not Recommended



**Not Recommended**

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