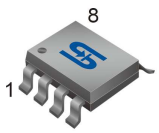
TAIWAN SEMICONDUCTOR

RoHS COMPLIANCE

TSM4459

30V P-Channel MOSFET

SOP-8



Pin Definition:

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

PRODUCT SUMMARY

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

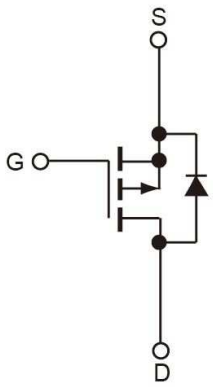
Features

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

Application

- DC-DC Converter
- Battery Power System

Block Diagram



P-Channel MOSFET

Ordering Information

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

Note: “G” denote for Halogen Free Product

Absolute Maximum Rating (T_A = 25°C unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_A = 25°C	I_D	-17	A
	T_A = 70°C		-13.6	
Pulsed Drain Current		I_{DM}	-68	A
Maximum Power Dissipation Note a.	T_A = 25°C	P_D	2.5	W
	T_A = 70°C		1.6	
Operating Junction Temperature		T_J	+150	°C
Operating Junction and Storage Temperature Range		T_J, T_{STG}	- 55 to +150	°C

Thermal Performance

Parameter	Symbol	Limit	Unit
Junction to Ambient Thermal Resistance Note a.	$R\Theta_{JA}$	50	°C/W

Notes:

a. The Device Surface Mounted on 1inch^2 FR4 Board with 2oz copper.

Electrical Specifications (T_A = 25°C unless otherwise noted)

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = -250uA	BV_{DSS}	-30	--	--	V
Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = -250μA	$V_{GS(TH)}$	-1	--	-3	V
Gate Body Leakage	V_{GS} = ±20V, V_{DS} = 0V	I_{GSS}	--	--	±100	nA
Zero Gate Voltage Drain Current	V_{DS} = -30V, V_{GS} = 0V	I_{DSS}	--	--	-1.0	μA
Drain-Source On-State Resistance[a]	V_{GS} = -10V, I_D = -9A	$R_{DS(ON)}$	--	4	5.2	mΩ
	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	--	Ω
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_L = 15Ω, V_{GEN} = -10V, R_G = 4.7Ω	$t_{d(on)}$	--	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 ≤300μS, duty cycle ≤2%

TSM4459

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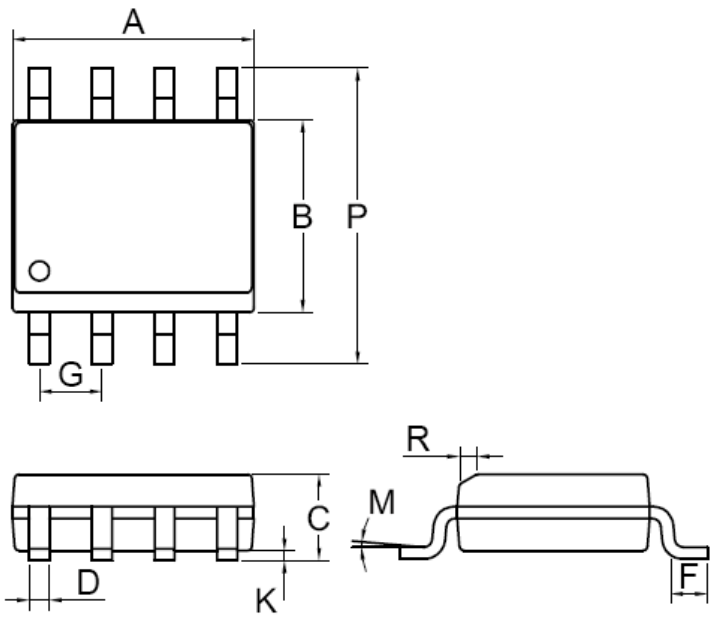
SOP-8 Mechanical Drawing



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	1.27BSC		0.05BSC	
K	0.10	0.25	0.004	0.009
M	0º	7º	0º	7º
P	5.80	6.20	0.229	0.244
R	0.25	0.50	0.010	0.019

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