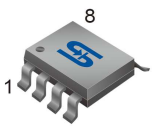
TSM414K34

30V N-Channel MOSFET with Schottky Diode

SOP-8



Pin Definition:

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

MOSFET PRODUCT SUMMARY

V_{DS} (V)	$R_{DS(on)}$(mΩ)	I_D (A)
30	55 @ V_{GS} = 10V	4
	65 @ V_{GS} = 4.5V	2

SCHOTTKY PRODUCT SUMMARY

V_{RRM} (V)	V_F (V)	I_F (A)
30	0.51	3

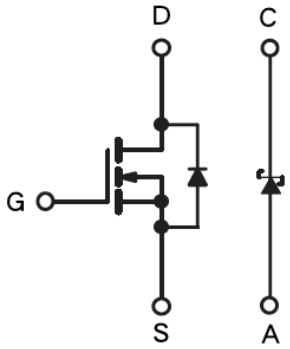
Features

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

Application

- Load Switch
- PA Switch

Block Diagram



N-Channel MOSFET with Schottky Diode

Ordering Information

Part No.	Package	Packing
TSM414K34CS RLG	SOP-8	2.5Kpcs / 13" Reel

Note: "G" denote for Halogen Free Product

MOSFET Absolute Maximum Rating (Ta = 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, V_{GS}	I_D	4	A
Pulsed Drain Current,	I_{DM}	20	A
Continuous Source Current (Diode Conduction)[a,b]	I_S	4	A
Maximum Power Dissipation @ Ta = 25°C	P_D	2	W
Operating Junction Temperature	T_J	+150	°C
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 ~ +150	°C

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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{RRM}	30	V
Average Forward Current	I_F	3	A
Non-Peak Repetitive Surge Current[c]	I_{FSM}	20	A

Thermal Performance

Parameter	Symbol	Limit	Unit
Junction to Ambient Thermal Resistance	$R\Theta_{JA}$	62.5	°C/W

Notes:

a. Pulse width limited by the Maximum junction temperature

b. Surface Mounted on FR4 Board using 1 inch sq pad size, t ≤ 10 sec.

C. Surge Applied at Rated Load Conditions, Half-Wave, Single Phase, 60Hz.

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MOSFET Electrical Specifications (Ta = 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	1.4	3	V
Gate Body Leakage	V_{GS} = ±20V, V_{DS} = 0V	I_{GSS}	--	--	±100	nA
Zero Gate Voltage Drain Current	V_{DS} = 24V, V_{GS} = 0V	I_{DSS}	--	--	1.0	μA
On-State Drain Current[a]	V_{DS} ≥ 5V, V_{GS} = 10V	$I_{D(ON)}$	30	--	--	A
Drain-Source On-State Resistance[a]	V_{GS} = 10V, I_D = 4A	$R_{DS(ON)}$	--	30	45	mΩ
	V_{GS} = 4.5V, I_D = 2A		--	40	55	
Forward Transconductance[a]	V_{DS} = 5V, I_D = 4A	g_{fs}	--	20	--	S
Diode Forward Voltage	I_S = 4A, V_{GS} = 0V	V_{SD}	--	1	1.2	V
Dynamic[b]						
Total Gate Charge	V_{DS} = 15V, I_D = 4A, V_{GS} = 10V	Q_g	--	13	--	nC
Gate-Source Charge		Q_{gs}	--	4.2	--	
Gate-Drain Charge		Q_{gd}	--	3.1	--	
Input Capacitance	V_{DS} = 15V, V_{GS} = 0V, f = 1.0MHz	C_{iss}	--	610	--	pF
Output Capacitance		C_{oss}	--	100	--	
Reverse Transfer Capacitance		C_{rss}	--	77	--	
Switching[c]						
Turn-On Delay Time	V_{DD} = 15V, R_L = 15Ω, I_D = 1A, V_{GEN} = 10V, R_G = 6Ω	$t_{d(on)}$	--	9.1	--	nS
Turn-On Rise Time		t_r	--	16.5	--	
Turn-Off Delay Time		$t_{d(off)}$	--	23	--	
Turn-Off Fall Time		t_f	--	3.5	--	

Schottky Electrical Specifications (Ta = 25°C unless otherwise noted)

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Forward Voltage Drop	I_F = 3A	V_{FM}	--	--	0.51	V
Reverse Leakage Current	V_R = 30V, Ta = 25°C	I_R	--	--	0.05	mA
	V_R = 30V, Ta = 100°C		--	--	18	
Voltage Rate of Charge	V_R = 30V	dv/dt	--	10000	--	V/us

Notes:

a. Pulse test: PW ≤300μS, duty cycle ≤2%

b. For DESIGN AID ONLY, not subject to production testing.

b. Switching time is essentially independent of operating temperature.

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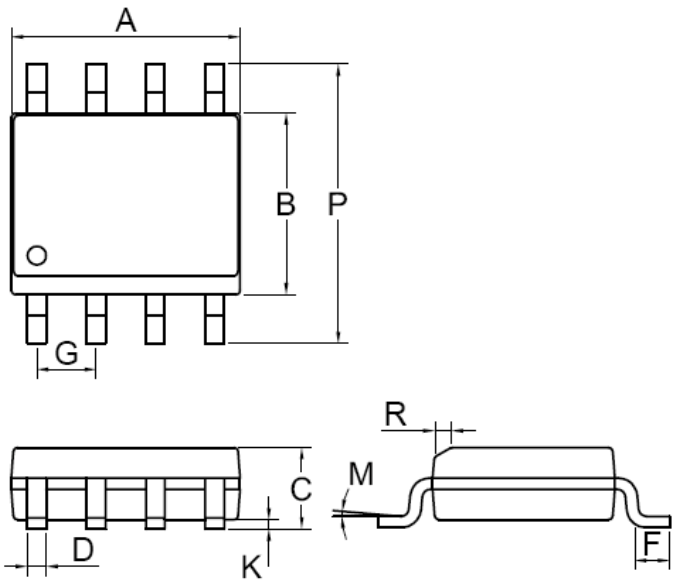
SOP-8 Mechanical Drawing



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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