TAIWAN SEMICONDUCTOR

RoHS COMPLIANCE

Preliminary

TSM4835
30V P-Channel MOSFET

SOP-8

Pin Definition:
1. Source
2. Source
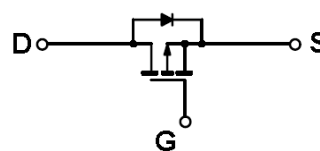3. Source
4. Gate
5, 6, 7, 8. Drain

PRODUCT SUMMARY

V_{DS} (V)	$R_{DS(on)}$(mΩ)	I_D (A)
-30	18 @ V_{GS} = -10V	-9.6
	30 @ V_{GS} = -4.5V	-7.5

Features

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

Application

- Load Switches
- Desktop PCs
- Notebook PCs

Ordering Information

Part No.	Package	Packing
TSM4835CS RL	SOP-8	2.5Kpcs / 13" Ree

Block Diagram

P-Channel 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}	±25	V
Continuous Drain Current		I_D	-9.6	A
Pulsed Drain Current		I_{DM}	-50	A
Continuous Source Current (Diode Conduction)[a,b]		I_S	-2.1	A
Maximum Power Dissipation	Ta = 25°C	P_D	2.5	W
	Ta = 75°C		1.6	
Operating Junction Temperature		T_J	+150	^{o}C
Operating Junction and Storage Temperature Range		T_J, T_{STG}	- 55 to +150	^{o}C

Thermal Performance

Parameter	Symbol	Limit	Unit
Junction to Foot (Drain) Thermal Resistance	RΘ_{JF}	18	^{o}C/W
Junction to Ambient Thermal Resistance (PCB mounted)	RΘ_{JA}	39	^{o}C/W

Notes:

a. Pulse width limited by the Maximum junction temperature

b. Surface Mounted on FR4 Board, t ≤ 10 sec.

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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	--	-3	V
Gate Body Leakage	V_{GS} = ±25V, V_{DS} = 0V	I_{GSS}	--	--	±100	nA
Zero Gate Voltage Drain Current	V_{DS} = -30V, V_{GS} = 0V	I_{DSS}	--	--	-1.0	µA
On-State Drain Current[a]	V_{DS} ≤ -5V, V_{GS} = -10V	$I_{D(ON)}$	-50	--	--	A
Drain-Source On-State Resistance[a]	V_{GS} = -10V, I_D = -9.6A	$R_{DS(ON)}$	--	14	18	mΩ
	V_{GS} = -4.5V, I_D = -7.5A		--	23	30	
Forward Transconductance[a]	V_{DS} = -15V, I_D = -9.6A	g_{fs}	--	30	--	S
Diode Forward Voltage	I_S = -2.1A, V_{GS} = 0V	V_{SD}	--	-0.8	-1.2	V
Dynamic[b]						
Total Gate Charge	V_{DS} = -15V, I_D = -9.6A, V_{GS} = -5V	Q_g	--	25	37	nC
Gate-Source Charge		Q_{gs}	--	6.5	--	
Gate-Drain Charge		Q_{gd}	--	12.5	--	
Input Capacitance	V_{DS} = -15V, V_{GS} = 0V, f = 1.0MHz	C_{iss}	--	2089	2347	pF
Output Capacitance		C_{oss}	--	597	--	
Reverse Transfer Capacitance		C_{rss}	--	495	624	
Switching[c]						
Turn-On Delay Time	V_{DD} = -15V, R_L = 15Ω, I_D = -1A, V_{GEN} = -10V, R_G = 6Ω	$t_{d(on)}$	--	15	25	nS
Turn-On Rise Time		t_r	--	13	20	
Turn-Off Delay Time		$t_{d(off)}$	--	60	100	
Turn-Off Fall Time		t_f	--	45	70	

Notes:
a. pulse test: PW ≤300µS, duty cycle ≤2%
b. For DESIGN AID ONLY, not subject to production testing.
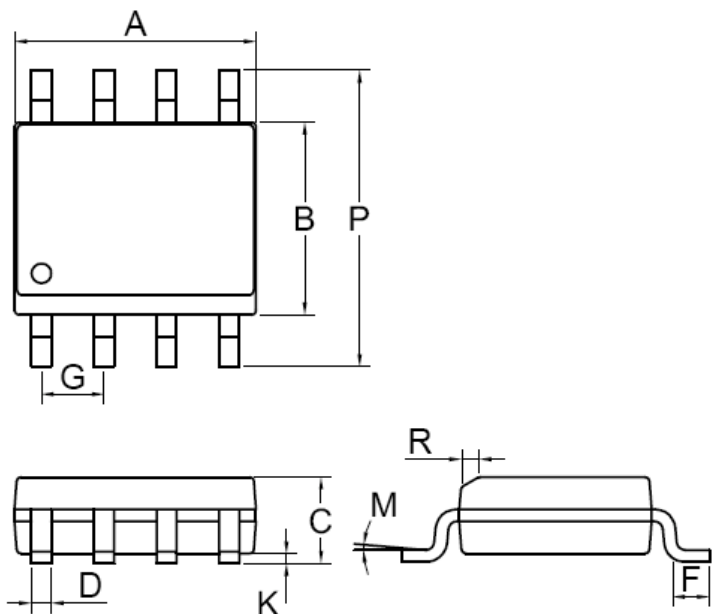b. Switching time is essentially independent of operating temperature.
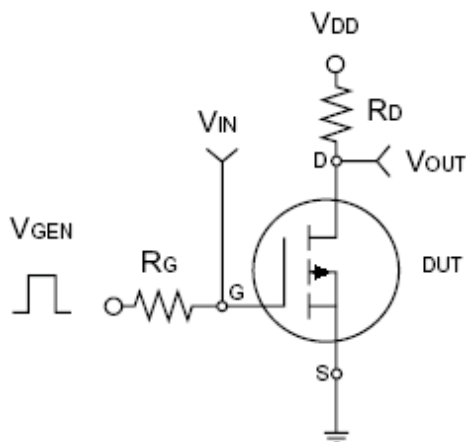
Switching Test Circuit
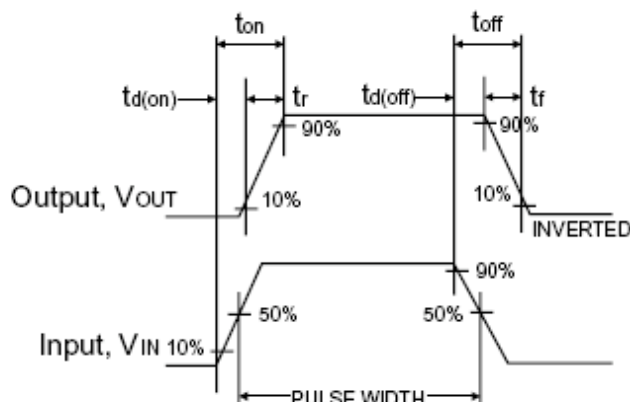
Switchin Waveforms

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	0°	7°	0°	7°
P	5.80	6.20	0.229	0.244
R	0.25	0.50	0.010	0.019

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