TAIWAN SEMICONDUCTOR

RoHS COMPLIANCE

TSM3548D

Complementary Enhancement MOSFET

SOT-26

Pin Definition:

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

MOSFET PRODUCT SUMMARY

	V_{DS} (V)	$R_{DS(on)}$(mΩ)	I_D (A)
N-Channel	30	41 @ V_{GS} = 10V	3.0
		45 @ V_{GS} = 4.5V	2.2
P-Channel	-30	60 @ V_{GS} = -10V	-2.2
		75 @ V_{GS} = -4.5V	-1.7

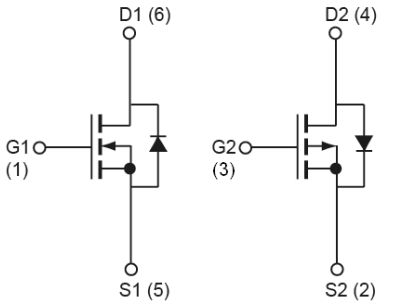
Features

- Fast switching speed
- High performance trench technology

Application

- Load Switch
- PA Switch

Block Diagram



N-Channel P-Channel

Ordering Information

Part No.	Package	Packing
TSM3548DCX6 RFG	SOT-26	3Kpcs / 7" Reel

Note: "G" denote for Halogen Free Product

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

Parameter		Symbol	N-CH Limit	P-CH Limit	Unit
Drain-Source Voltage		V_{DS}	30	-30	V
Gate-Source Voltage		V_{GS}	±12	±12	V
Continuous Drain Current, [b]	T_A=25°C	I_D	3.0	-2.2	A
	T_A=70°C		2.4	-1.8	
Pulsed Drain Current[a]		I_{DM}	12	-8	A
Drain-Source Diode Forward Current[b]		I_S	1	-1	A
Power Dissipation[b]	T_A=25°C	P_D	1.25	1.25	W
	T_A=70°C		0.75	0.75	
Operating Junction Temperature		T_J	150		°C
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 ~ +150		°C

Thermal Performance

Parameter	Symbol	N-CH Limit	P-CH Limit	Unit
Junction to Ambient Thermal Resistance	$R\Theta_{JA}$	100	100	°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 ≤ 5sec.

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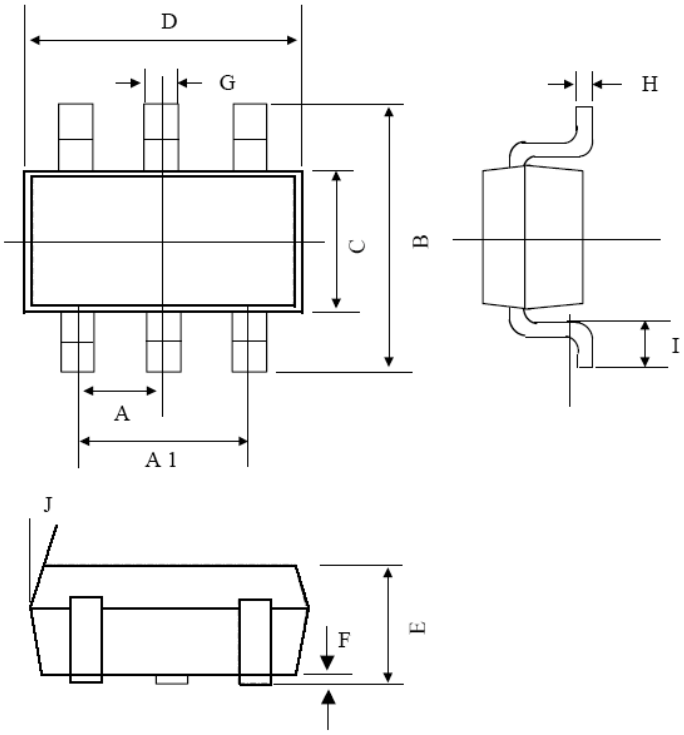
MOSFET Electrical Specifications (Ta = 25°C unless otherwise noted)

Parameter	Conditions	Symbol		Min	Typ	Max	Unit
Static							
Drain-Source Breakdown Voltage	V_{GS} =0V, I_D = 250uA	BV_{DSS}	N-CH	30	--	--	V
	V_{GS} =0V, I_D =-250uA		P-CH	-30	--	--	
Gate Threshold Voltage	V_{DS} =V_{GS}, I_D = 250μA	$V_{GS(TH)}$	N-CH	0.7	0.9	1.4	V
	V_{DS} =V_{GS}, I_D =-250μA		P-CH	-0.7	-0.9	-1.3	
Gate Body Leakage	V_{GS} = 20V, V_{DS} =0V	I_{GSS}	N-CH	--	--	±100	nA
	V_{GS} = -20V, V_{DS} =0V		P-CH	--	--	±100	
Zero Gate Voltage Drain Current	V_{DS} =24V, V_{GS} =0V	I_{DSS}	N-CH	--	--	1	μA
	V_{DS} =-24V, V_{GS} =0V		P-CH	--	--	-1	
Drain-Source On-State Resistance[a]	V_{GS} =10V, I_D =3A	$R_{DS(ON)}$	N-CH	--	31	41	mΩ
	V_{GS} =-10V, I_D =-2.2A		P-CH	--	53	60	
	V_{GS} =4.5V, I_D =2.2A		N-CH	--	34	45	
	V_{GS} =-4.5V, I_D =-1.7A		P-CH	--	64	75	
Dynamic[b]							
Total Gate Charge	N-Channel V_{DS} =10V, I_D =4.5A, V_{GS} =10V P-Channel V_{DS} =-15V, I_D =-3.5A, V_{GS} =-10V	Q_g	N-CH	--	7	--	nC
			P-CH	--	9.7	--	
Gate-Source Charge		Q_{gs}	N-CH	--	1.6	--	
			P-CH	--	1.6	--	
Gate-Drain Charge		Q_{gd}	N-CH	--	1.0	--	
			P-CH	--	1.3	--	
Input Capacitance	N-Channel V_{DS} =15V, V_{GS} = 0V, f = 1.0MHz P-Channel V_{DS} =-15V, V_{GS} = 0V, f = 1.0MHz	C_{iss}	N-CH	--	393	--	pF
			P-CH	--	63	--	
Output Capacitance		C_{oss}	N-CH	--	57	--	
			P-CH	--	497	--	
Reverse Transfer Capacitance		C_{rss}	N-CH	--	62	--	
			P-CH	--	51	--	
Switching[b]							
Turn-On Delay Time	N-Channel V_{DD} =15V, I_D = 1A, V_{GS} =10V, R_{GEN} = 6Ω P-Channel V_{DD} =-15V, I_D = -1A, V_{GS} =-10V, R_{GEN} = 6Ω	$t_{d(on)}$	N-CH	--	7	--	nS
			P-CH	--	6.2	--	
Turn-On Rise Time		t_r	N-CH	--	10	--	
			P-CH	--	9.5	--	
Turn-Off Delay Time		$t_{d(off)}$	N-CH	--	16	--	
			P-CH	--	26	--	
Turn-Off Fall Time		t_f	N-CH	--	7	--	
			P-CH	--	5.5	--	
Diode Forward Voltage	I_S =1A, V_{GS} = 0V	V_{SD}	N-CH	--	--	1.1	V
	I_S =-1A, V_{GS} = 0V		P-CH	--	--	-1.3	

Notes:
a. Pulse test: PW ≤300μS, duty cycle ≤2%
b. For DESIGN AID ONLY, not subject to production testing.

SOT-26 Mechanical Drawing



SOT-26 DIMENSION						
DIM	MILLIMETERS			INCHES		
	MIN	TYP	MAX	MIN	TYP	MAX
A	0.95 BSC			0.0374 BSC		
A1	1.9 BSC			0.0748 BSC		
B	2.60	2.80	3.00	0.1024	0.1102	0.1181
C	1.40	1.50	1.70	0.0551	0.0591	0.0669
D	2.80	2.90	3.10	0.1101	0.1142	0.1220
E	1.00	1.10	1.20	0.0394	0.0433	0.0472
F	0.00	--	0.10	0.00		0.0039
G	0.35	0.40	0.50	0.0138	0.0157	0.0197
H	0.10	0.15	0.20	0.0039	0.0059	0.0079
I	0.30	--	0.60	0.0118	--	0.0236
J	5º	--	10º	5º	--	10º

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