

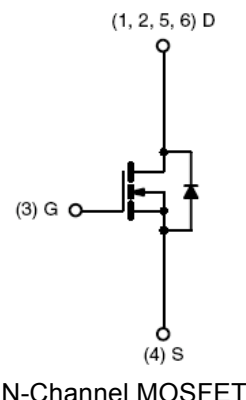
SOT-363

Pin Definition:

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

PRODUCT SUMMARY

V_{DS} (V)	$R_{DS(on)}$ (m Ω)	I_D (A)
20	34 @ $V_{GS} = 4.5V$	3
	38 @ $V_{GS} = 2.5V$	3
	44 @ $V_{GS} = 2.0V$	3

Block Diagram

Features

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

Application

- Notebook PC Application
- Portable Equipment Applications

Ordering Information

Part No.	Package	Packing
TSM1412CU6 RF	SOT-363	3Kpcs / 7" Reel

Absolute Maximum Rating ($T_a = 25^\circ C$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 8	V
Continuous Drain Current	I_D	5	A
Pulsed Drain Current	I_{DM}	15	A
Continuous Source Current (Diode Conduction) ^{a,b}	I_S	1.0	A
Maximum Power Dissipation	P_D	1.6	W
		0.8	
Operating Junction Temperature	T_J	+150	$^\circ C$
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ C$

Thermal Performance

Parameter	Symbol	Limit	Unit
Junction to Case Thermal Resistance	$R_{\theta_{JF}}$	45	$^\circ C/W$
Junction to Ambient Thermal Resistance (PCB mounted)	$R_{\theta_{JA}}$	80	$^\circ C/W$

Notes:

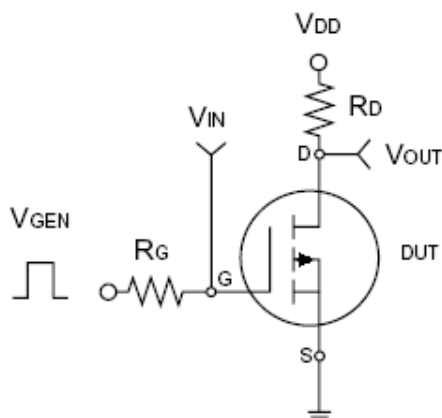
- a. Pulse width limited by the Maximum junction temperature
 b. Surface Mounted on FR4 Board, $t \leq 5$ sec.

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

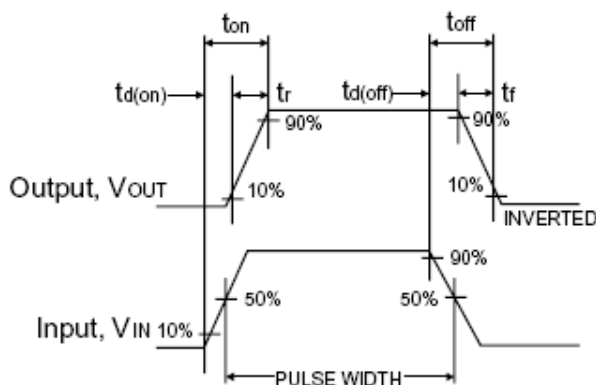
Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	BV_{DSS}	20	--	--	V
Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	$V_{GS(TH)}$	0.45	0.65	0.85	V
Gate Body Leakage	$V_{GS} = \pm 8V, V_{DS} = 0V$	I_{GSS}	--	--	± 100	nA
Zero Gate Voltage Drain Current	$V_{DS} = 16V, V_{GS} = 0V$	I_{DSS}	--	--	1.0	μA
On-State Drain Current	$V_{DS} \geq 10V, V_{GS} = 4.5V$	$I_{D(ON)}$	15	--	--	A
Drain-Source On-State Resistance	$V_{GS} = 4.5V, I_D = 3A$	$R_{DS(ON)}$	--	28	34	m Ω
	$V_{GS} = 2.5V, I_D = 3A$		--	32	38	
	$V_{GS} = 2.0V, I_D = 3A$		--	37	44	
Forward Transconductance	$V_{DS} = 15V, I_D = 3A$	g_{fs}	--	40	--	S
Diode Forward Voltage	$I_S = 1.0A, V_{GS} = 0V$	V_{SD}	--	0.8	1.2	V
Dynamic ^b						
Total Gate Charge	$V_{DS} = 10V, I_D = 3A,$ $V_{GS} = 4.5V$	Q_g	--	11	14	nC
Gate-Source Charge		Q_{gs}	--	1.5	--	
Gate-Drain Charge		Q_{gd}	--	2.1	--	
Input Capacitance	$V_{DS} = 10V, V_{GS} = 0V,$ $f = 1.0MHz$	C_{iss}	--	900	--	pF
Output Capacitance		C_{oss}	--	140	--	
Reverse Transfer Capacitance		C_{rss}	--	100	--	
Switching ^c						
Turn-On Delay Time	$V_{DD} = 10V, R_L = 10\Omega,$ $I_D = 1A, V_{GEN} = 4.5V,$ $R_G = 6\Omega$	$t_{d(on)}$	--	0.53	0.8	nS
Turn-On Rise Time		t_r	--	1.4	2.2	
Turn-Off Delay Time		$t_{d(off)}$	--	13.5	20	
Turn-Off Fall Time		t_f	--	5.9	9	

Notes:

- a. pulse test: $PW \leq 300\mu s$, duty cycle $\leq 2\%$
b. For DESIGN AID ONLY, not subject to production testing.
b. Switching time is essentially independent of operating temperature.

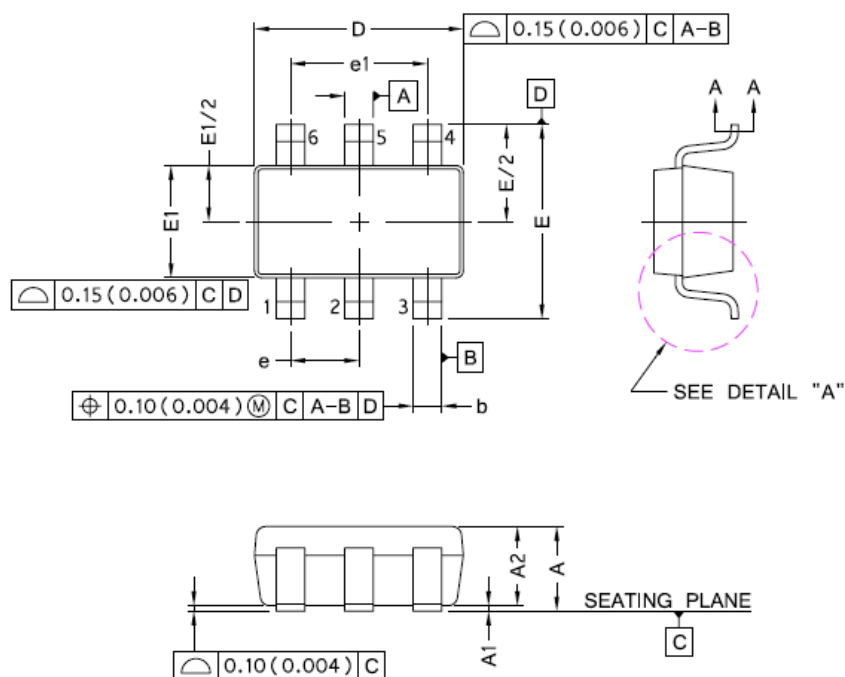


Switching Test Circuit



Switchin Waveforms

SOT-363 Mechanical Drawing



SOT-363 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX.
A	0.80	1.10	0.031	0.043
A1	0	0.10	0	0.004
A2	0.80	1.00	0.031	0.040
b	0.15	0.30	0.006	0.012
b1	0.15	0.25	0.006	0.010
c	0.08	0.22	0.003	0.009
c1	0.08	0.20	0.003	0.008
D	1.90	2.10	0.074	0.084
E	2.00	2.20	0.078	0.086
E1	1.15	1.35	0.045	0.055
e	0.65 BSC		0.025 BSC	
e1	1.30 BSC		0.051 BSC	
L	0.26	0.46	0.010	0.018
θ	0°	8°	0°	8°
θ1	4°	10°	4°	10°

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