

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	75 @ $V_{GS} = 10V$	3.6
	115 @ $V_{GS} = 4.5V$	2.9

Features

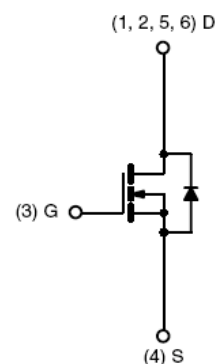
- Advance Trench Process Technology
- PWM Optimized

Application

- Boost Converter in Portable devices
- Low Current Synchronous Rectifier

Ordering Information

Part No.	Package	Packing
TSM1424CU6 RF	SOT-363	3Kpcs / 7" Reel

Block Diagram


N-Channel MOSFET

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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	3.6	A
Pulsed Drain Current	I_{DM}	10	A
Continuous Source Current (Diode Conduction) ^{a,b}	I_S	1.3	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)

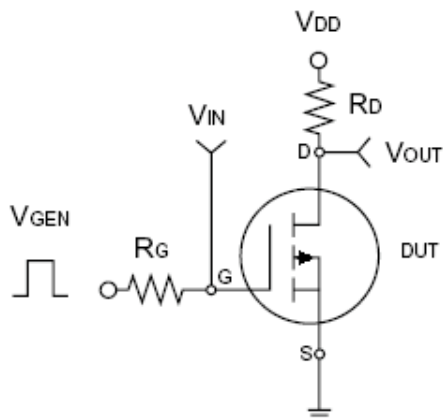
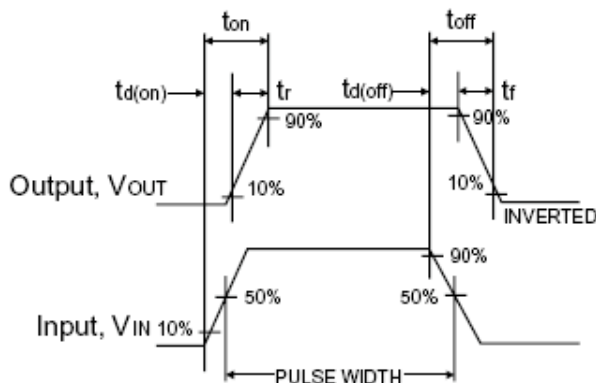
Electrical Specifications (Ta = 25°C unless otherwise noted)						
Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 250μA	BV _{DSS}	30	--	--	V
Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	V _{GS(TH)}	0.8	--	2.5	V
Gate Body Leakage	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	V _{DS} ≥ 10V, V _{GS} = 4.5V	I _{D(ON)}	10	--	--	A
Drain-Source On-State Resistance	V _{GS} = 10V, I _D = 3.6A	R _{DS(ON)}	--	61	75	mΩ
	V _{GS} = 4.5V, I _D = 2.9A		--	92	115	
Forward Transconductance	V _{DS} = 10V, I _D = 3.6A	g _{fs}	--	5	--	S
Diode Forward Voltage	I _S = 1.3A, V _{GS} = 0V	V _{SD}	--	0.8	1.2	V
Dynamic ^b						
Total Gate Charge	V _{DS} = 15V, I _D = 3.6A, V _{GS} = 4.5V	Q _g	--	1.9	3	nC
Gate-Source Charge		Q _{gs}	--	0.75	--	
Gate-Drain Charge		Q _{gd}	--	0.75	--	
Input Capacitance	V _{DS} = 15V, V _{GS} = 0V, f = 1.0MHz	C _{iss}	--	190	--	pF
Output Capacitance		C _{oss}	--	100	--	
Reverse Transfer Capacitance		C _{rss}	--	55	--	
Switching ^c						
Turn-On Delay Time	V _{DD} = 15V, R _L = 15Ω, I _D = 1A, V _{GEN} = 10V, R _G = 6Ω	t _{d(on)}	--	10	15	nS
Turn-On Rise Time		t _r	--	12	18	
Turn-Off Delay Time		t _{d(off)}	--	15	22	
Turn-Off Fall Time		t _f	--	9	15	

Notes:

 a. pulse test: $PW \leq 300\mu s$, duty cycle $\leq 2\%$

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

c. Switching time is essentially independent of operating temperature.


Switching Test Circuit

Switchin Waveforms

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