TSM3443

Preliminary

-20V P-Channel Enhancement-Mode MOSFET

SOT-26

Pin assignment:
1. Drain 6. Drain
2. Drain 5, Drain
3. Gate 4. Source

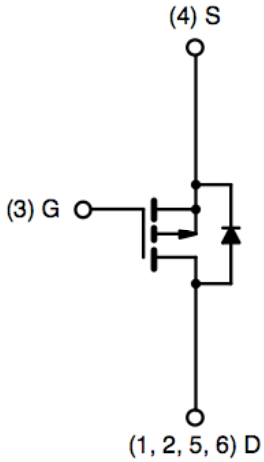
V_{DS} = -20V
$R_{DS\ (on)}$, Vgs @ -4.5V, Ids @ -4.7A =60mΩ
$R_{DS\ (on)}$, Vgs @ -2.5V, Ids @ -3.7A =100mΩ

Features

- ✧ Advanced trench process technology
- ✧ High density cell design for ultra low on-resistance
- ✧ Fully Characterized Avalanche Voltage and Current
- ✧ Improved Shoot-Through FOM

Block Diagram

P-Channel MOSFET



Ordering Information

Part No.	Packing	Package
TSM3443CX6	Tape & Reel 3,000/per reel	SOT-26

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

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	-20V	V
Gate-Source Voltage		V_{GS}	±12	V
Continuous Drain Current,		I_D	-4.7	A
Pulsed Drain Current,		I_{DM}	-20	A
Maximum Power Dissipation	Ta = 25 °C	P_D	2	W
	Ta = 70 °C		1.3	
Operating Junction Temperature		T_J	+150	°C
Operating Junction and Storage Temperature Range		T_J, T_{STG}	- 55 to +150	°C

Thermal Performance

Parameter	Symbol	Limit	Unit
Junction to Foot (Drain) Thermal Resistance	Rθjf	30	°C/W
Junction to Ambient Thermal Resistance (PCB mounted)	Rθja	50	°C/W

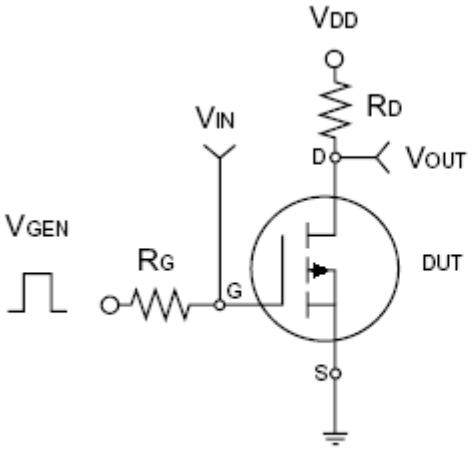
Note: Surface mounted on FR4 board t<=10sec.

Electrical Characteristics

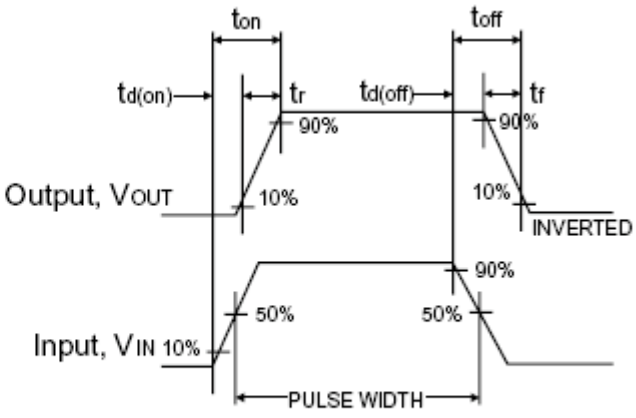
(Ta = 25 °C unless otherwise noted)

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = - 250uA	BV_{DSS}	-20	--	--	V
Drain-Source On-State Resistance	V_{GS} = - 4.5V, I_D = -4.7A	$R_{DS(ON)}$	--	48	60	mΩ
Drain-Source On-State Resistance	V_{GS} = - 2.5V, I_D = -1A	$R_{DS(ON)}$	--	80	100	
Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = - 250uA	$V_{GS(TH)}$	-0.6	--	-1.4	V
Zero Gate Voltage Drain Current	V_{DS} = -20V, V_{GS} = 0V	I_{DSS}	--	--	-1.0	μA
Gate Body Leakage	V_{GS} = ±12V, V_{DS} = 0V	I_{GSS}	--	--	±100	nA
On-State Drain Current	V_{DS} =-5V, V_{GS} = -4.5V	$I_{D(ON)}$	-15	--	--	A
Forward Transconductance	V_{DS} = -10V, I_D = - 4.7A	g_{fs}	--	11	--	S
Dynamic						
Total Gate Charge	V_{DS} = -10V, I_D = -4.7A, V_{GS} = -4.5V	Q_g	--	6	9	nC
Gate-Source Charge		Q_{gs}	--	1.4	--	
Gate-Drain Charge		Q_{gd}	--	1.9	--	
Turn-On Delay Time	V_{DD} = -10V, R_L = 10Ω, I_D = -1A, V_{GEN} = - 4.5V, R_G = 6Ω	$t_{d(on)}$	--	22	35	nS
Turn-On Rise Time		t_r	--	35	55	
Turn-Off Delay Time		$t_{d(off)}$	--	45	70	
Turn-Off Fall Time		t_f	--	25	40	
Input Capacitance	V_{DS} = -10V, V_{GS} = 0V, f = 1.0MHz	C_{iss}	--	640	--	pF
Output Capacitance		C_{oss}	--	180	--	
Reverse Transfer Capacitance		C_{rss}	--	90	--	
Source-Drain Diode						
Max. Diode Forward Current		I_S	--	--	-1.3	A
Diode Forward Voltage	I_S = -1.3A, V_{GS} = 0V	V_{SD}	--	-0.75	-1.2	V

Note : pulse test: pulse width <=300uS, duty cycle <=2%

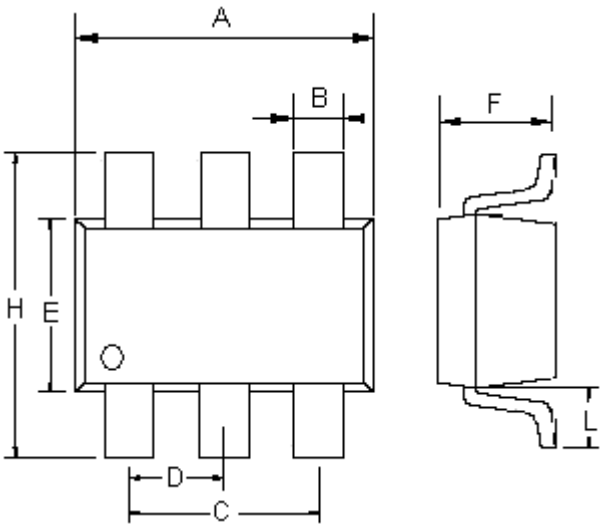


Switching Test Circuit



Switchin Waveforms

SOT-26 Mechanical Drawing



SOT-26 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.70	3.00	0.106	0.118
B	0.25	0.50	0.010	0.020
C	1.90(typ)		0.075(typ)	
D	0.95(typ)		0.037(typ)	
E	1.50	1.70	0.059	0.067
F	1.05	1.35	0.041	0.053
H	2.60	3.00	0.102	0.118
L	0.60(typ)		0.024(typ)	