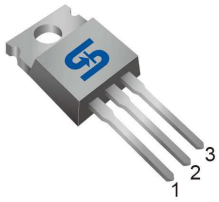
TSM160N10

100V N-Channel Power MOSFET

TO-220



Pin Definition:
1. Gate
2. Drain
3. Source

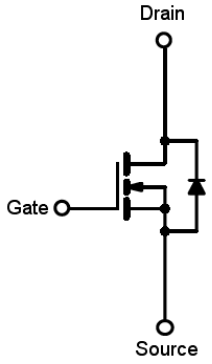
PRODUCT SUMMARY

V_{DS} (V)	$R_{DS(on)}$(mΩ)(max)	I_D (A)
100	5.5 @ V_{GS}=10V	160

Features

- Advanced Trench Technology
- Low $R_{DS(ON)}$ 5.5mΩ (Max.)
- Low gate charge typical @ 154nC (Typ.)
- Low Crss typical @ 300pF (Typ.)

Block Diagram



N-Channel MOSFET

Ordering Information

Part No.	Package	Packing
TSM160N10CZ C0	TO-220	50pcs / Tube

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

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current [a]	T_C=25℃	I_D [a]	160	A
	T_C=70℃		127	
Drain Current-Pulsed Note [b]		I_{DM}	620	A
Single Pulse Avalanche Energy [c]		E_{AS}	1500	mJ
Maximum Power Dissipation	T_C=25℃	P_D	250	W
	T_C=70℃		160	
Storage Temperature Range		T_{STG}	-55 to +150	℃
Operating Junction Temperature Range		T_J	-55 to +150	℃

Thermal Performance

Parameter	Symbol	Limit	Unit
Thermal Resistance - Junction to Case (t≦10sec)	$R\Theta_{JC}$	0.5	°C/W
Thermal Resistance - Junction to Ambient (Steady State)	$R\Theta_{JA}$	62.5	°C/W

Notes a: Current limited only by package.

Notes b: Repetitive rating: Pulse width limited by the Maximum junction temperature.

Notes c: L=0.3mH, I_{AS}=100A, R_G=25Ω, Starting T_j=25℃

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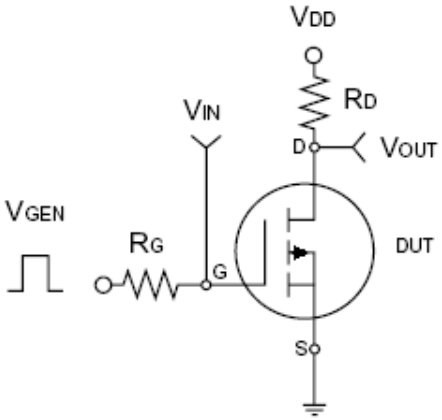
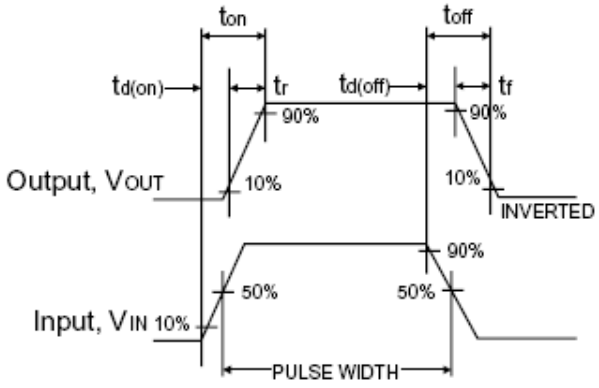
Electrical Specifications (Ta = 25°C unless otherwise noted)

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Static[1]						
Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = 250uA	BV_{DSS}	100	--	--	V
Drain-Source On-State Resistance	V_{GS} = 10V, I_D = 80A	$R_{DS(ON)}$	--	4.5	5.5	mΩ
Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250uA	$V_{GS(TH)}$	2	3	4	V
Zero Gate Voltage Drain Current	V_{DS} = 80V, V_{GS} = 0V	I_{DSS}	--	--	1	uA
Gate Body Leakage	V_{GS} = ±20V, V_{DS} = 0V	I_{GSS}	--	--	±100	nA
Dynamic						
Total Gate Charge	V_{DS} = 30V, I_D = 80A, V_{GS} = 10V	Q_g	--	154	--	nC
Gate-Source Charge		Q_{gs}	--	35	--	
Gate-Drain Charge		Q_{gd}	--	40	--	
Input Capacitance	V_{DS} = 30V, V_{GS} = 0V, f = 1.0MHz	C_{iss}	--	8600	--	pF
Output Capacitance		C_{oss}	--	780	--	
Reverse Transfer Capacitance		C_{rss}	--	300	--	
Switching						
Turn-On Delay Time	V_{GS} = 10V, V_{DS} = 30V, R_G = 3.3Ω, I_D = 1A	$t_{d(on)}$	--	25	--	nS
Turn-On Rise Time		t_r	--	40	--	
Turn-Off Delay Time		$t_{d(off)}$	--	85	--	
Turn-Off Fall Time		t_f	--	45	--	
Drain-Source Diode Characteristics and Maximum Rating						
Drain-Source Diode Forward Voltage	V_{GS}=0V, I_S=80A	V_{SD}	-	0.8	1	V
Reverse Recovery Time	I_S = 80A, T_J=25 °C dI/dt = 100A/us	t_{fr}		65		nS
Reverse Recovery Charge		Q_{fr}		103		nC

Notes:
1. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
2. Switching time is essentially independent of operating temperature.

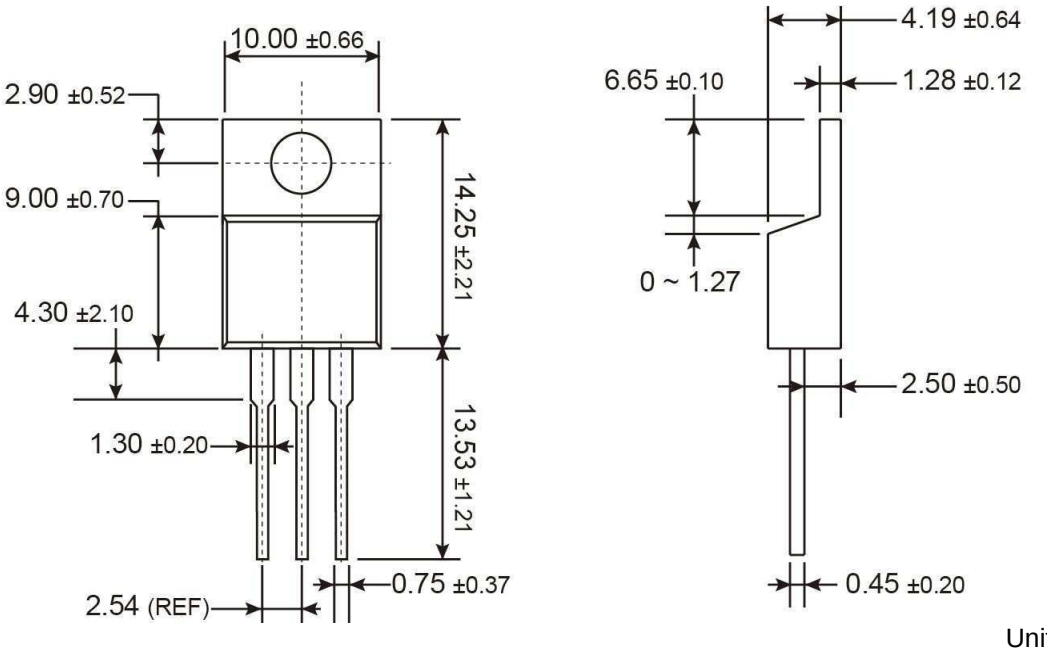


Switching Test Circuit



Switchin Waveforms

TO-220 Mechanical Drawing



Unit: Millimeters

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