TSM7P06CP

60V P-Channel Power MOSFET

TO-252



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

Key Parameter Performance

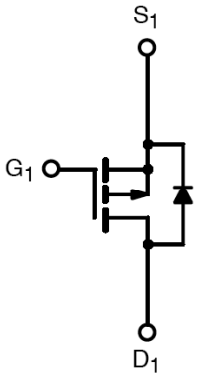
Parameter		Value	Unit
V_{DS}		-60	V
$R_{DS(on)}$ (max)	V_{GS} = -10V	180	mΩ
	V_{GS} = -4.5V	220	
Q_g		8.2	nC

Ordering Information

Ordering code	Package	Packing
TSM7P06CP ROG	TO-252	2.5kpcs / 13” Reel

Note: Halogen-free according to IEC 61249-2-21 definition

Block Diagram



P-Channel MOSFET

Absolute Maximum Ratings (T_C=25°C unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	-60	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C = 25ºC	I_D	-7	A
	T_C = 100ºC		-4.4	A
Pulsed Drain Current (Note 1)		I_{DM}	-28	A
Single Pulse Avalanche Energy (Note 2)		E_{AS}	32	mJ
Single Pulse Avalanche Current (Note 1)		I_{AS}	-8	A
Power Dissipation @ T_C = 25°C		P_D	15.6	W
Operating Junction Temperature		T_J	150	ºC
Storage Temperature Range		T_{STG}	-50 to +150	°C

Thermal Performance

Parameter	Symbol	Limit	Unit
Thermal Resistance - Junction to Case	$R_{\Theta JC}$	8	°C/W
Thermal Resistance - Junction to Ambient	$R_{\Theta JA}$	62	

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60V P-Channel Power MOSFET

Pb-Free RoHS COMPLIANT

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

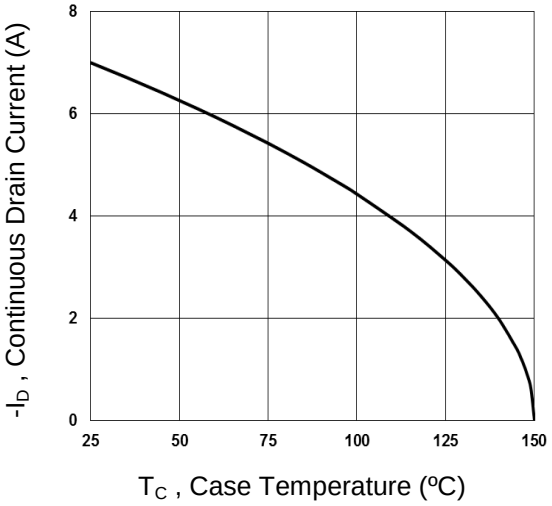
Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = -250μA	BV_{DSS}	-60	--	--	V
Drain-Source On-State Resistance	V_{GS} = -10V, I_D = -3A	$R_{DS(ON)}$	--	153	180	mΩ
	V_{GS} = -4.5V, I_D = -1.5A		--	198	220	
Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = -250μA	$V_{GS(TH)}$	-1.2	-1.6	-2.5	V
Zero Gate Voltage Drain Current	V_{DS} = -60V, V_{GS} = 0V	I_{DSS}	--	--	-1	μA
	V_{DS} = -48V, V_{GS} = 0V, T_C = 125ºC		--	--	-10	
Gate Body Leakage	V_{GS} = ±20V, V_{DS} = 0V	I_{GSS}	--	--	±100	nA
Forward Transconductance (Note 3)	V_{DS} = -10V, I_D = -2A	g_{fs}	--	3	--	S
Dynamic						
Total Gate Charge (Note 3,4)	V_{DS} = -30V, I_D = -3A, V_{GS} = -10V	Q_g	--	8.2	--	nC
Gate-Source Charge (Note 3,4)		Q_{gs}	--	1.8	--	
Gate-Drain Charge (Note 3,4)		Q_{gd}	--	1.5	--	
Input Capacitance	V_{DS} = -30V, V_{GS} = 0V, f = 1.0MHz	C_{iss}	--	425	--	pF
Output Capacitance		C_{oss}	--	35	--	
Reverse Transfer Capacitance		C_{rss}	--	20	--	
Switching						
Turn-On Delay Time (Note 3,4)	V_{DD} = -30V, I_D = -1A, R_{GEN} =6Ω	$t_{d(on)}$	--	5.2	--	ns
Turn-On Rise Time (Note 3,4)		t_r	--	19	--	
Turn-Off Delay Time (Note 3,4)		$t_{d(off)}$	--	35	--	
Turn-Off Fall Time (Note 3,4)		t_f	--	10.6	--	
Source-Drain Diode Ratings and Characteristic						
Maximum Continuous Drain-Source Diode Forward Current	Integral reverse diode in the MOSFET	I_S	--	--	-7	A
Maximum Pulse Drain-Source Diode Forward Current		I_{SM}	--	--	-28	A
Diode-Source Forward Voltage	V_{GS} = 0V, I_S = -1A	V_{SD}	--	--	-1	V

Note:

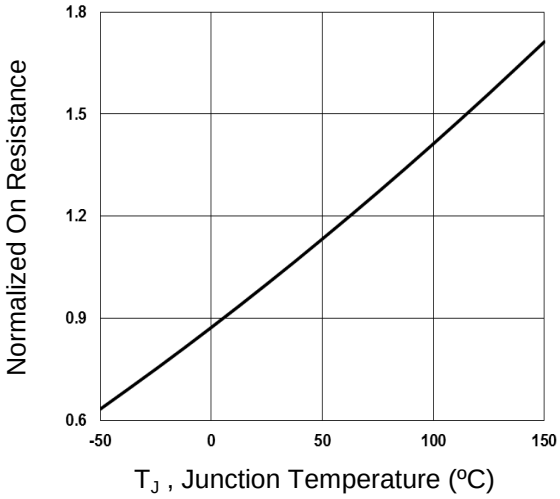
1. Pulse width limited by safe operating area
2. L=1mH, I_{AS} =-8A, V_{DD} = -25V, R_G = 25Ω, Starting T_J = 25ºC
3. Pulse test: pulse width ≤300μs, duty cycle ≤2%
4. Switching time is essentially independent of operating temperature.

Electrical Characteristics Curve

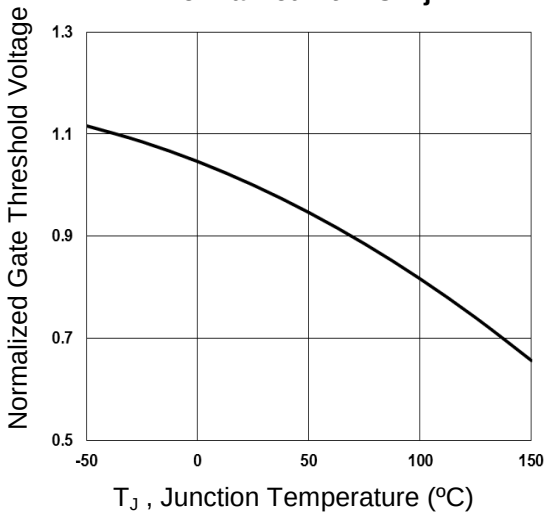
Continuous Drain Current vs. Tc



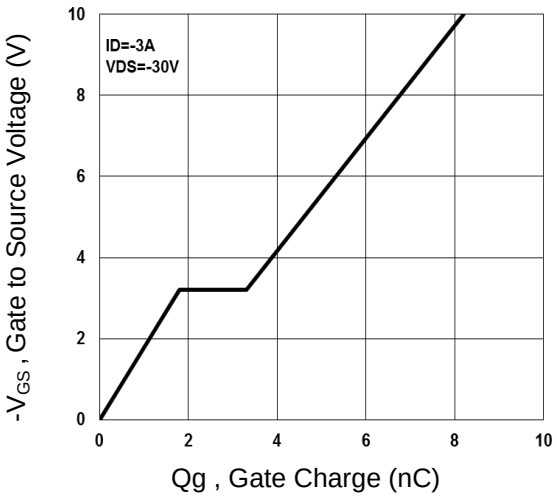
Normalized Rds(on) vs. Tj



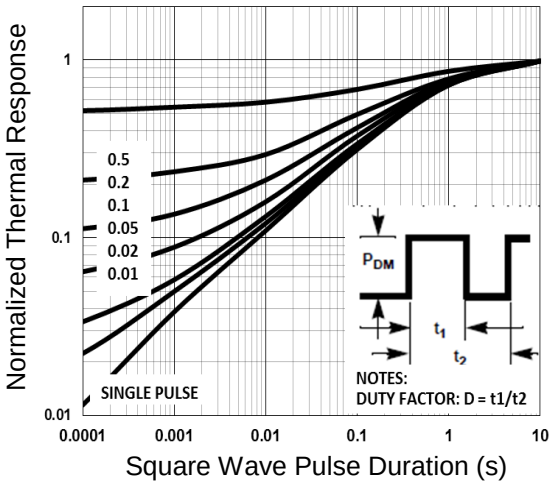
Normalized Vth vs. Tj



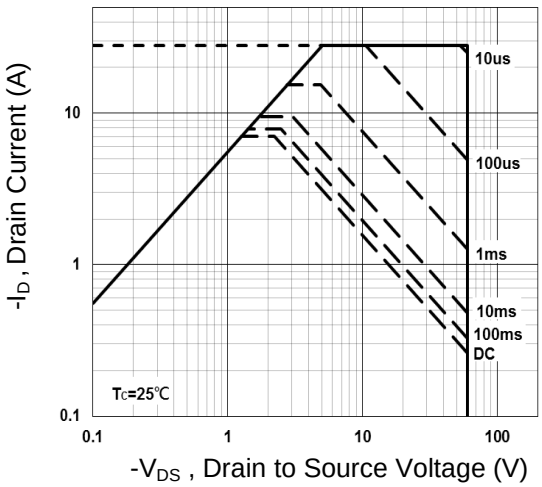
Gate Charge Waveform



Normalized Transient Impedance



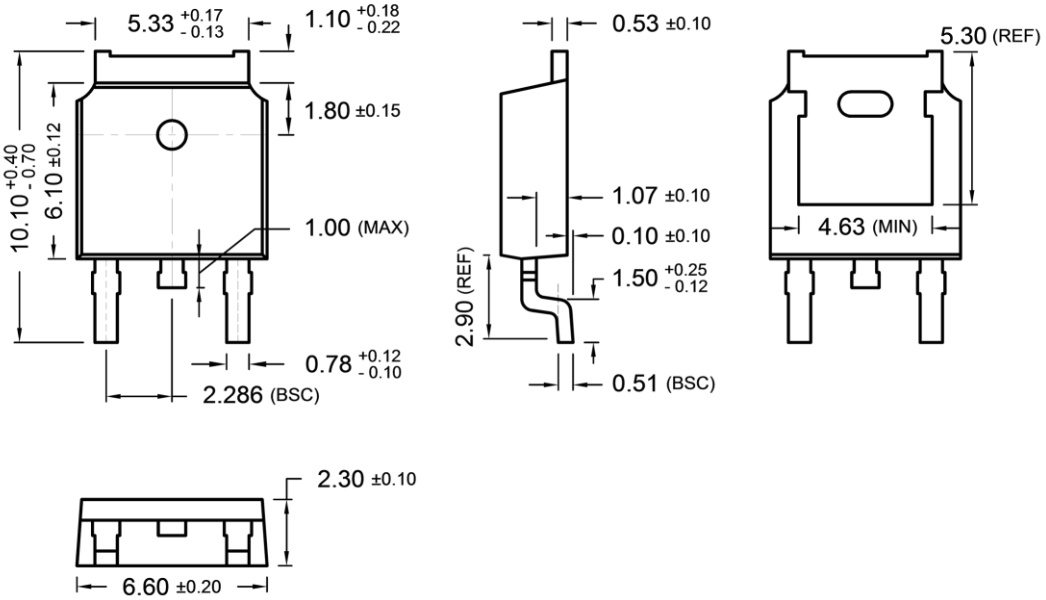
Maximum Safe Operation Area



TSM7P06CP

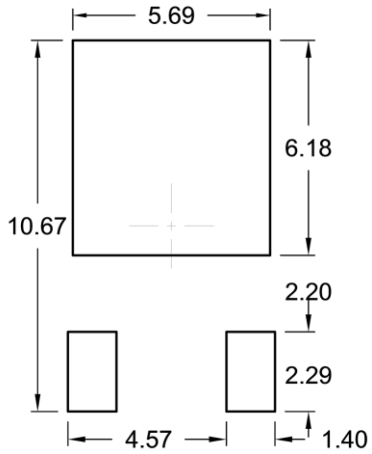
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TO-252 Mechanical Drawing

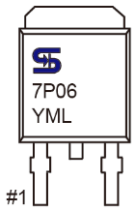


Unit: Millimeters

SUGGESTED PAD LAYOUT (Unit: Millimeters)



Marking Diagram



Y = Year Code

M = Month Code for Halogen Free Product
(**O**=Jan, **P**=Feb, **Q**=Mar, **R**=Apl, **S**=May, **T**=Jun, **U**=Jul, **V**=Aug, **W**=Sep, **X**=Oct, **Y**=Nov, **Z**=Dec)

L = Lot Code

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