

TSM7P06CP

60V P-Channel Power MOSFET



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

Key Parameter Performance

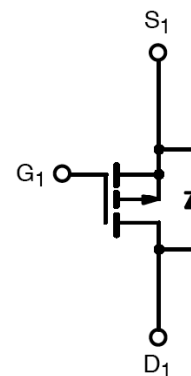
Parameter	Value	Unit
V_{DS}	-60	V
$R_{DS(on)}$ (max)	$V_{GS} = -10V$	180
	$V_{GS} = -4.5V$	220
Q_g	8.2	nC

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 ($T_C=25^\circ C$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	$T_C = 25^\circ C$	-7
		$T_C = 100^\circ C$	-4.4
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 @ $T_C = 25^\circ C$	P_D	15.6	W
Operating Junction Temperature	T_J	150	$^\circ C$
Storage Temperature Range	T_{STG}	-50 to +150	$^\circ C$

Thermal Performance

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



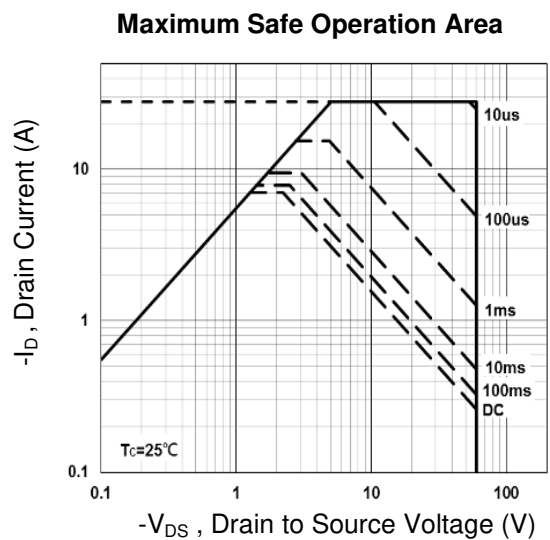
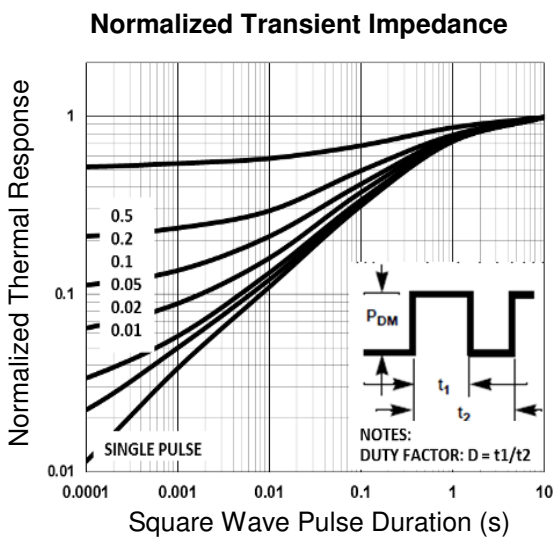
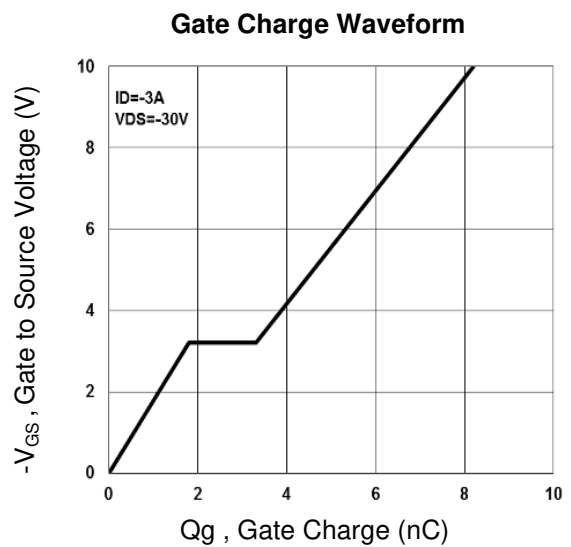
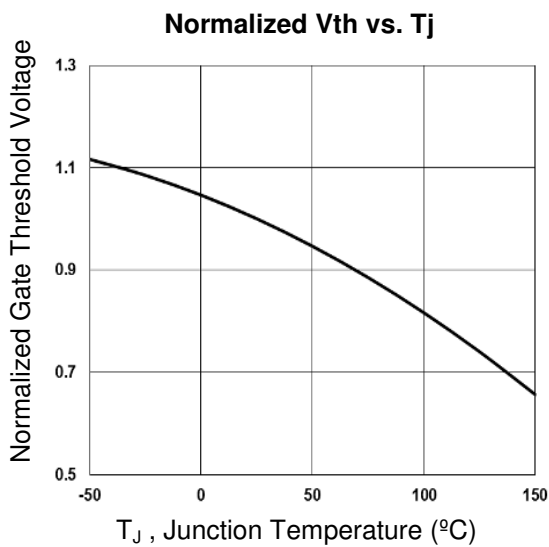
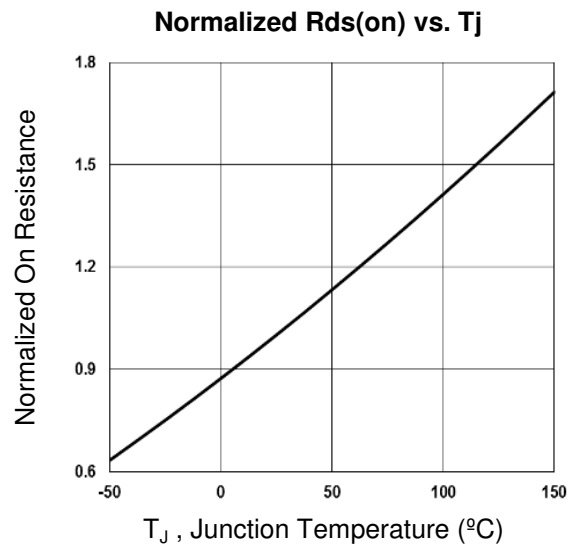
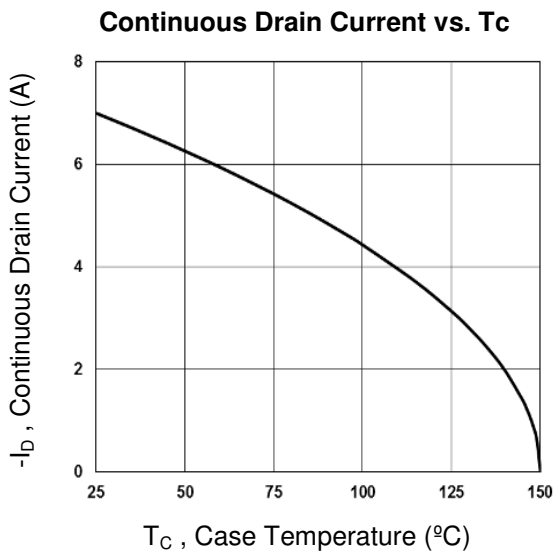
Electrical Specifications (T_C=25°C unless otherwise noted)

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 = 125°C		--	--	-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:

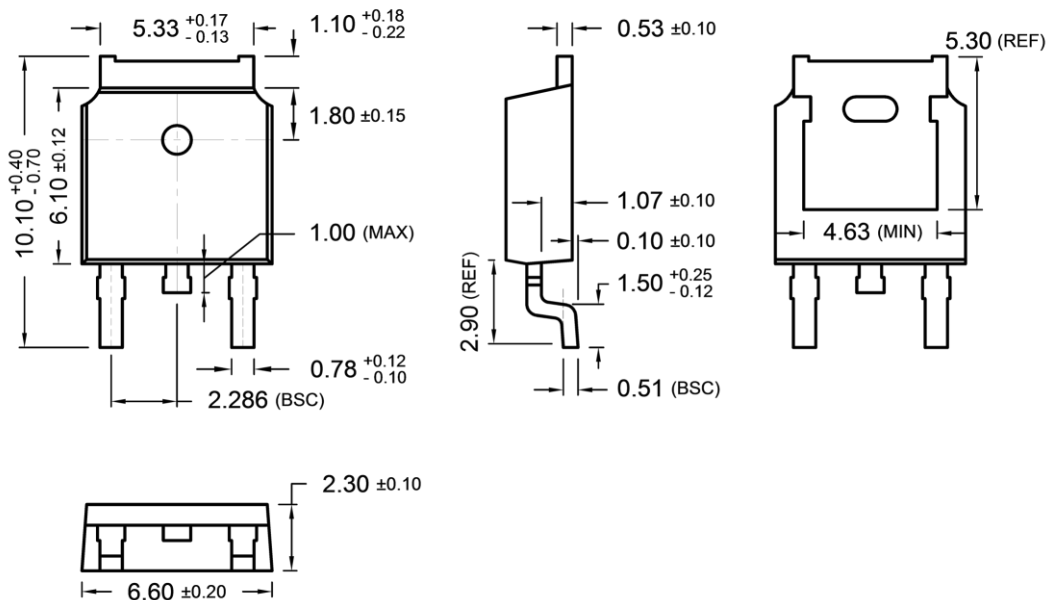
1. Pulse width limited by safe operating area
2. L=1mH, I_{AS} = -8A, V_{DD} = -25V, R_G = 25Ω, Starting T_J = 25°C
3. Pulse test: pulse width ≤300μs, duty cycle ≤2%
4. Switching time is essentially independent of operating temperature.

Electrical Characteristics Curve



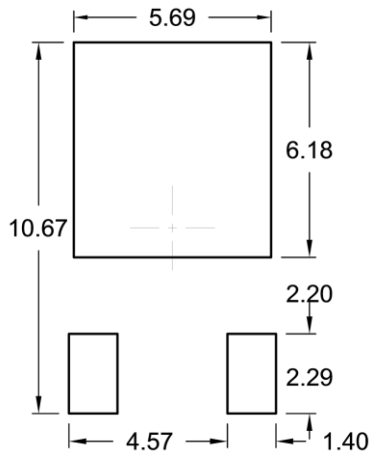


TO-252 Mechanical Drawing

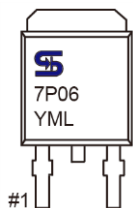


Unit: Millimeters

SUGGESTED PAD LAYOUT (Unit: Millimeters)



Marking Diagram



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

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