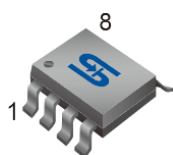


SOP-8

Pin Definition:

- | | |
|-----------|----------|
| 1. Source | 8. Drain |
| 2. Source | 7. Drain |
| 3. Source | 6. Drain |
| 4. Gate | 5. Drain |

TSM600P03CS

30V P-Channel Power MOSFET

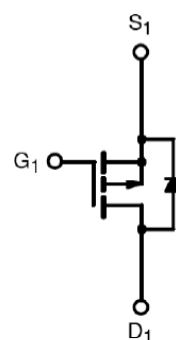
Key Parameter Performance

Parameter		Value	Unit
V_{DS}		-30	V
$R_{DS(on)}$ (max)	$V_{GS}=-10V$	60	mΩ
	$V_{GS}=-4.5V$	90	
Q_g		5.1	nC

Ordering Information

Part No.	Package	Packing
TSM600P03CS RLG	SOP-8	2.5kps / 13" Reel

Note: "G" denotes for Halogen- and Antimony-free as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds

Block Diagram


P-Channel MOSFET

Absolute Maximum Ratings ($T_c = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current*	$T_c = 25^\circ\text{C}$	-4.7	A
	$T_c = 100^\circ\text{C}$	-3	A
Pulsed Drain Current ^(Note 1)	I_{DM}	-18.8	A
Power Dissipation @ $T_c = 25^\circ\text{C}$	P_D	2.1	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

Thermal Performance

Parameter	Symbol	Limit	Unit
Thermal Resistance - Junction to Ambient	$R_{\theta JA}$	50	$^\circ\text{C/W}$

Electrical Specifications ($T_J = 25^\circ\text{C}$ unless otherwise noted)

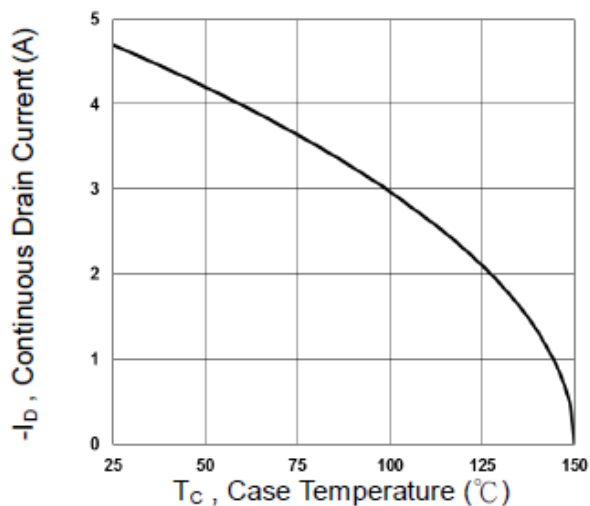
Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	BV_{DSS}	-30	--	--	V
Drain-Source On-State Resistance	$V_{GS} = -10V, I_D = -3A$	$R_{DS(ON)}$	--	44	60	mΩ
	$V_{GS} = -4.5V, I_D = -2A$		--	73	90	
Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	$V_{GS(TH)}$	-1.2	-1.6	-2.5	V
Zero Gate Voltage Drain Current	$V_{DS} = -30V, T_J = 25^{\circ}C$	I_{DSS}	--	--	-1	μA
	$V_{DS} = -24V, T_J = 125^{\circ}C$		--	--	-10	
Gate Body Leakage	$V_{GS} = \pm 20V, V_{DS} = 0V$	I_{GSS}	--	--	±100	nA
Forward Transconductance ^(Note 2)	$V_{DS} = -10V, I_D = -3A$	g_{fs}	--	3.5	--	S
Dynamic						
Total Gate Charge ^(Note 2,3)	$V_{DS} = -15V, I_D = -3A,$ $V_{GS} = -4.5V$	Q_g	--	5.1	--	nC
Gate-Source Charge ^(Note 2,3)		Q_{gs}	--	2	--	
Gate-Drain Charge ^(Note 2,3)		Q_{gd}	--	2.2	--	
Input Capacitance	$V_{DS} = -15V, V_{GS} = 0V,$ $f = 1.0MHz$	C_{iss}	--	560	--	pF
Output Capacitance		C_{oss}	--	55	--	
Reverse Transfer Capacitance		C_{rss}	--	40	--	
Switching						
Turn-On Delay Time ^(Note 2,3)	$V_{DD} = -15V, I_D = -1A,$ $V_{GS} = -10V, R_G = 6\Omega$	$t_{d(on)}$	--	3.4	--	ns
Turn-On Rise Time ^(Note 2,3)		t_r	--	10.8	--	
Turn-Off Delay Time ^(Note 2,3)		$t_{d(off)}$	--	26.9	--	
Turn-Off Fall Time ^(Note 2,3)		t_f	--	6.9	--	
Source-Drain Diode Ratings and Characteristic						
Maximum Continuous Drain-Source Diode Forward Current	Integral reverse diode in the MOSFET	I_S	--	--	-4.7	A
Maximum Pulse Drain-Source Diode Forward Current		I_{SM}	--	--	-18.8	A
Diode-Source Forward Voltage	$V_{GS} = 0V, I_S = -1A$	V_{SD}	--	--	-1	V

Note:

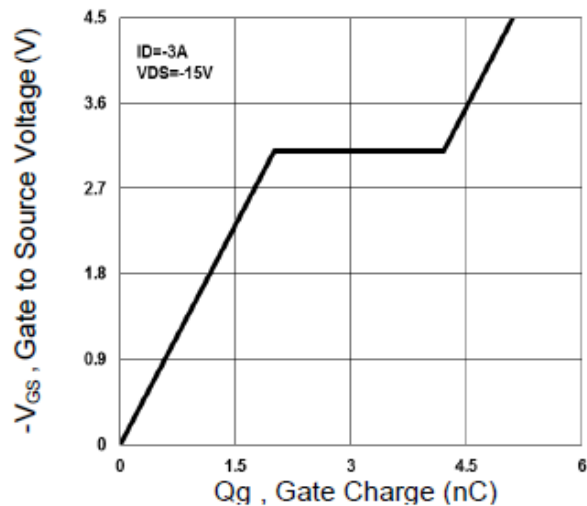
- Pulse width limited by safe operating area
- Pulse test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- Switching time is essentially independent of operating temperature.

Electrical Characteristics Curve

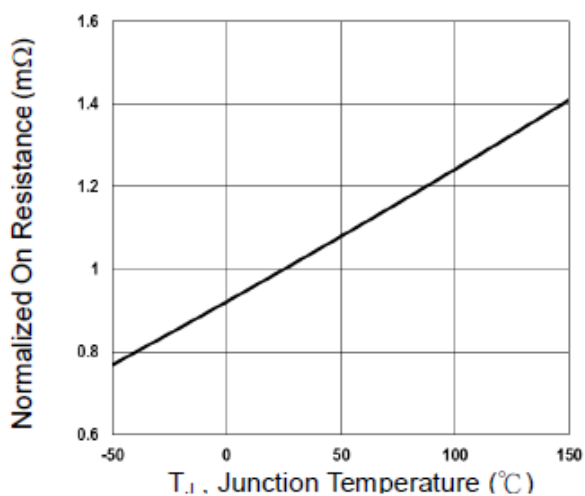
Continuous Drain Current vs. T_c



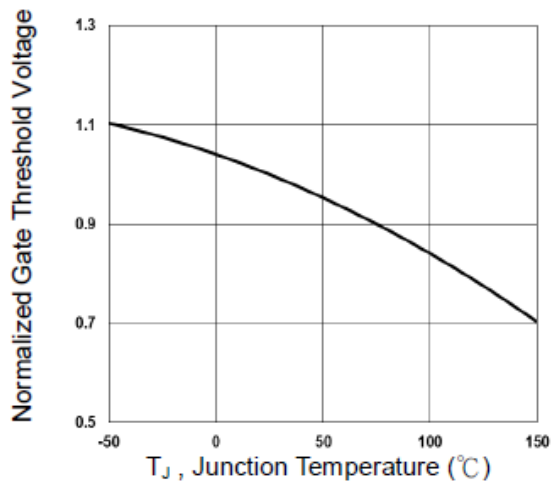
Gate Charge



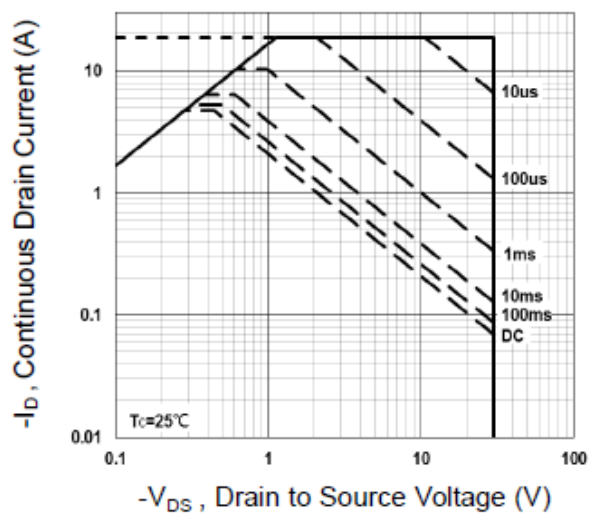
On-Resistance vs. Junction Temperature



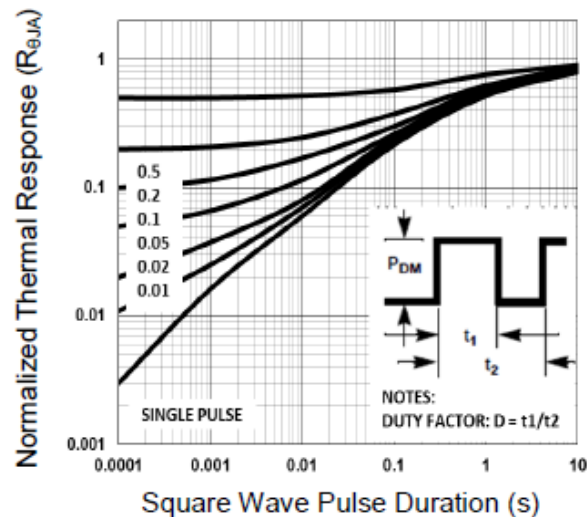
Threshold Voltage vs. Junction Temperature



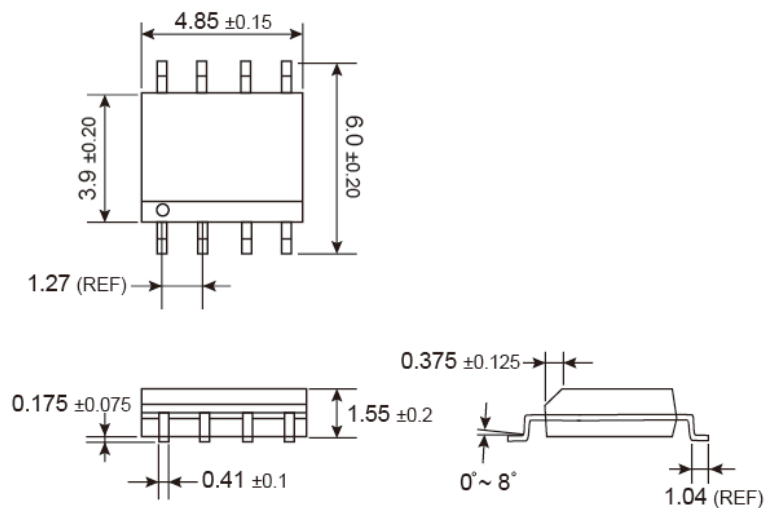
Maximum Safe Operating Area



Normalized Thermal Transient Impedance Curve

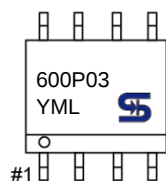


SOP-8 Mechanical Drawing



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

TSM600P03CS

30V P-Channel Power MOSFET

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