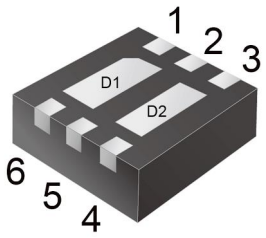
TSM500P02DCQ

20V Dual P-Channel MOSFET

TDFN2x2



Pin Definition:

1. Source 1
2. Gate 1
3. Drain 2
4. Source 2
5. Gate 2
6. Drain 1

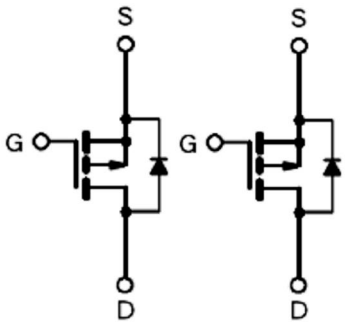
Key Parameter Performance

Parameter		Value	Unit
V_{DS}		-20	V
$R_{DS(on)}$ (max)	V_{GS} = -4.5V	50	mq
	V_{GS} = -2.5V	65	
	V_{GS} = -1.8V	85	
Q_g		9.6	nC

Features

- Halogen-free
- Suited for 1.8V drive applications
- Low profile package

Block Diagram



Dual P-Channel MOSFET

Ordering Information

Part No.	Package	Packing
TSM500P02DCQ RFG	TDFN2x2	3kpcs / 7ò Reel

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

Absolute Maximum Ratings (T_C = 25℃ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±10	V
Continuous Drain Current	I_D	-4.7	A
Pulsed Drain Current (Note 1)	I_{DM}	-18.8	A
Maximum Power Dissipation @ T_C = 25℃	P_D	1	W
Operating Junction Temperature	T_J	+150	℃
Operating Junction and Storage Temperature Range	T_J, T_{STG}	- 55 to +150	℃

Thermal Performance

Parameter	Symbol	Limit	Unit
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	80	℃/W

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

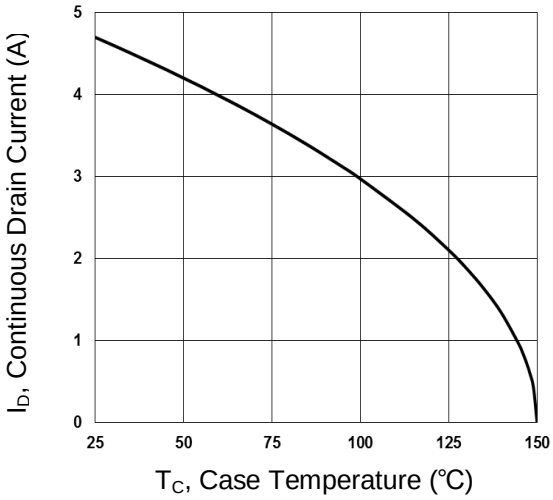
Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = -250μA	BV_{DSS}	-20	--	--	V
Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = -250μA	$V_{GS(TH)}$	-0.3	-0.6	-0.8	V
Gate-Source Leakage Current	V_{GS} = ±10V, V_{DS} = 0V	I_{GSS}	--	--	±100	nA
Drain-Source Leakage Current	V_{DS} = -20V, V_{GS} = 0V	I_{DSS}	--	--	-1	μA
Drain-Source On-State Resistance	V_{GS} = -4.5V, I_D = -3A	$R_{DS(on)}$	--	42	50	mq
	V_{GS} = -2.5V, I_D = -2A		--	57	65	
	V_{GS} = -1.8V, I_D = -1A		--	75	85	
Forward Transconductance (Note 2)	V_{DS} = -10V, I_D = -3A	g_{fs}	--	7	--	S
Dynamic						
Total Gate Charge (Note 2,3)	V_{DS} = -10V, I_D = -3A, V_{GS} = -4.5V	Q_g	--	9.6	13	nC
Gate-Source Charge (Note 2,3)		Q_{gs}	--	1.6	2	
Gate-Drain Charge (Note 2,3)		Q_{gd}	--	2	4	
Input Capacitance	V_{DS} = -10V, V_{GS} = 0V, f = 1MHz	C_{iss}	--	850	1230	pF
Output Capacitance		C_{oss}	--	70	100	
Reverse Transfer Capacitance		C_{rss}	--	55	80	
Switching						
Turn-On Delay Time (Note 2,3)	V_{DD} = -10V, I_D = -1A, V_{GS} = -4.5V, R_G = 25q	$t_{d(on)}$	--	6	11	ns
Turn-On Rise Time (Note 2,3)		t_r	--	21.6	41	
Turn-Off Delay Time (Note 2,3)		$t_{d(off)}$	--	51	97	
Turn-Off Fall Time (Note 2,3)		t_f	--	13.8	26	
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current	V_G = V_D = 0V, Force Current	I_S	--	--	-4.7	A
Pulsed Source Current		I_{SM}	--	--	-18.8	A
Diode Forward Voltage	V_{GS} = 0V, I_S = -1A, T_J = 25°C	V_{SD}	--	--	-1	V

Note:

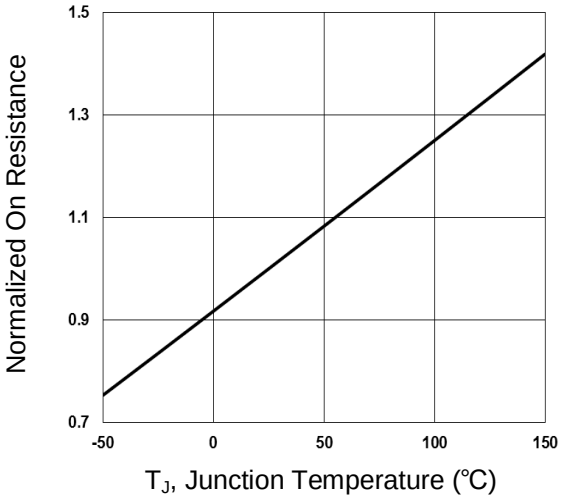
1. Repetitive Rating: Pulsed width limited by maximum junction temperature.
2. Pulse test: PW Ò300μs, duty cycle Ò2%.
3. Essentially independent of operating temperature.

Electrical Characteristics Curves

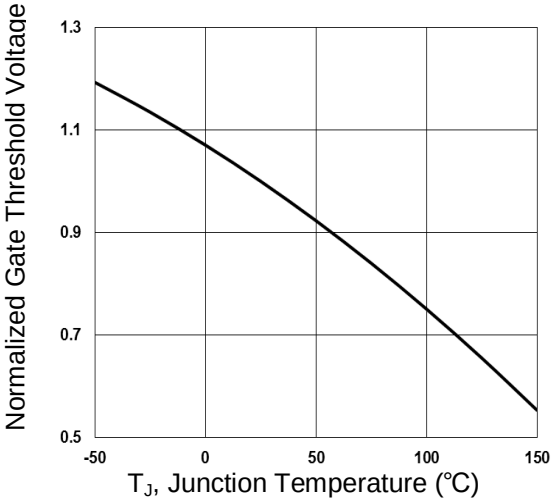
Continuous Drain Current vs. Tc



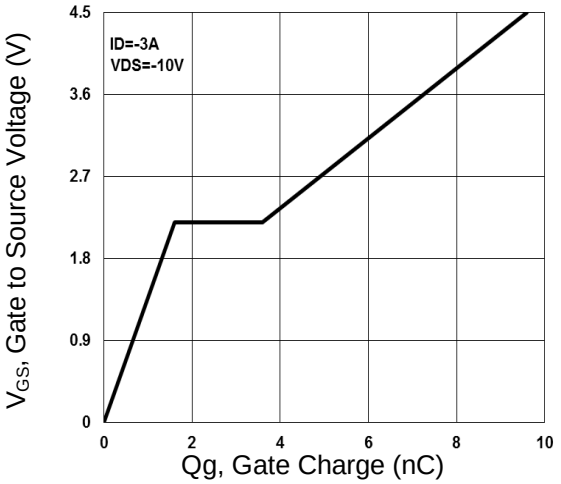
Normalized RDSON vs. T_J



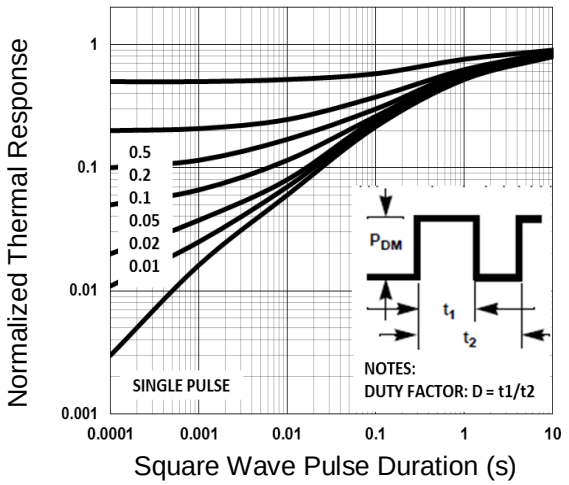
Normalized V_{th} vs. T_J



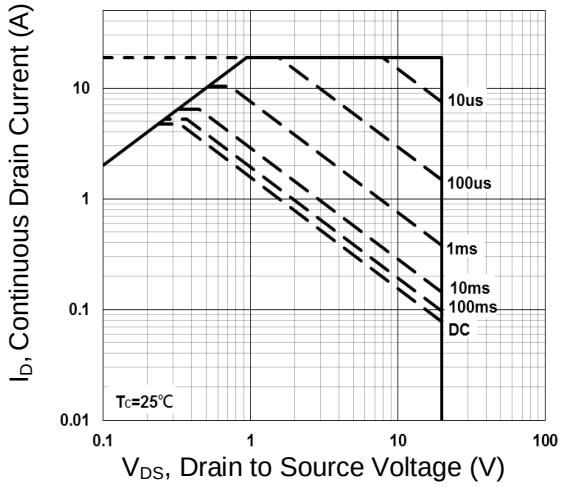
Gate Charge Waveform



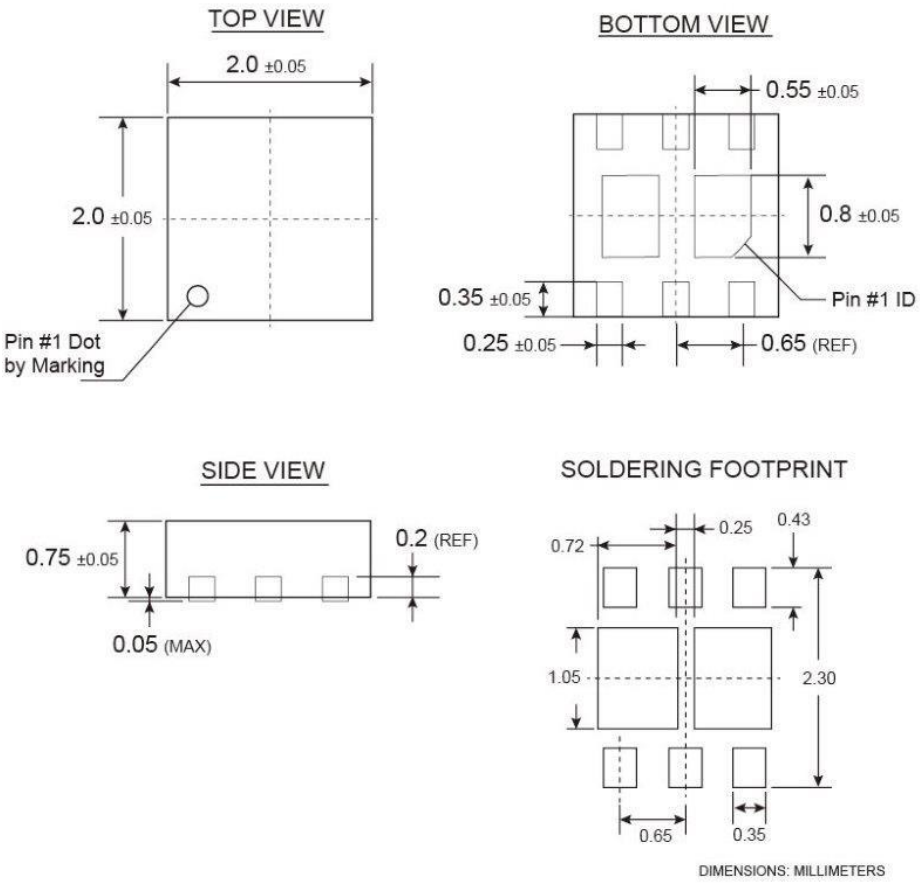
Normalized Transient Impedance



Maximum Safe Operation Area



TDFN2x2 Mechanical Drawing



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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