TSM4424

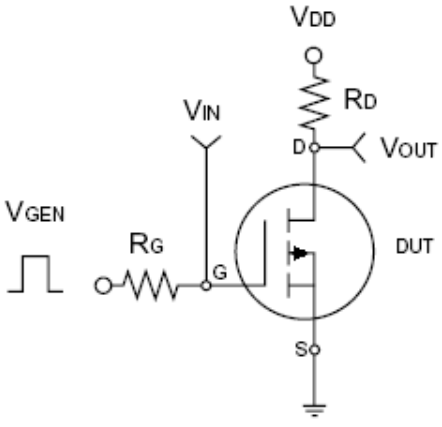
20V N-Channel MOSFET

Electrical Specifications

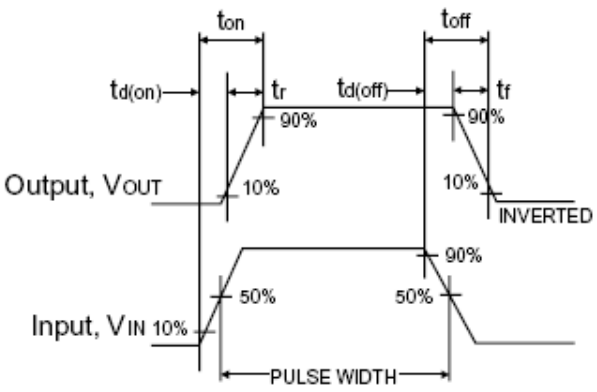
Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Static(Note 2)						
Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = 250uA	BV_{DSS}	20	--	--	V
Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250uA	$V_{GS(TH)}$	--	0.65	1	V
Gate Body Leakage	V_{GS} = ±8V, V_{DS} = 0V	I_{GSS}	--	--	±100	nA
Zero Gate Voltage Drain Current	V_{DS} = 20V, V_{GS} = 0V	I_{DSS}	--	--	1.0	uA
On-State Drain Current	V_{DS} =5V, V_{GS} = 4.5V	$I_{D(ON)}$	30	--	--	A
Drain-Source On-State Resistance	V_{GS} = 4.5V, I_D = 4.5A	$R_{DS(ON)}$	--	23	30	mΩ
	V_{GS} = 2.5V, I_D = 3.5A		--	25	35	
	V_{GS} = 1.8V, I_D = 2.0A		--	35	45	
Forward Transconductance	V_{DS} = 10V, I_D = 6A	g_{fs}	--	40	--	S
Diode Forward Voltage	I_S = 1.7A, V_{GS} = 0V	V_{SD}	--	0.8	1.2	V
Dynamic(Note 3)						
Total Gate Charge	V_{DS} = 10V, I_D = 4.5A, V_{GS} = 4.5V	Q_g	--	11.2	14	nC
Gate-Source Charge		Q_{gs}	--	1.4	--	
Gate-Drain Charge		Q_{gd}	--	2.2	--	
Input Capacitance	V_{DS} = 10V, V_{GS} = 0V, f = 1.0MHz	C_{iss}	--	500	--	pF
Output Capacitance		C_{oss}	--	300	--	
Reverse Transfer Capacitance		C_{rss}	--	140	--	
Switching(Note 4)						
Turn-On Delay Time	V_{DD} = 10V, R_L = 10Ω, I_D = 1A, V_{GEN} = 4.5V, R_G = 6Ω	$t_{d(on)}$	--	15	25	ns
Turn-On Rise Time		t_r	--	30	60	
Turn-Off Delay Time		$t_{d(off)}$	--	35	70	
Turn-Off Fall Time		t_f	--	15	45	

Notes:

1. Pulse width limited by the maximum junction temperature
2. Pulse test: PW ≤ 300μs, duty cycle ≤ 2%
3. For DESIGN AID ONLY, not subject to production testing.
4. Switching time is essentially independent of operating temperature.



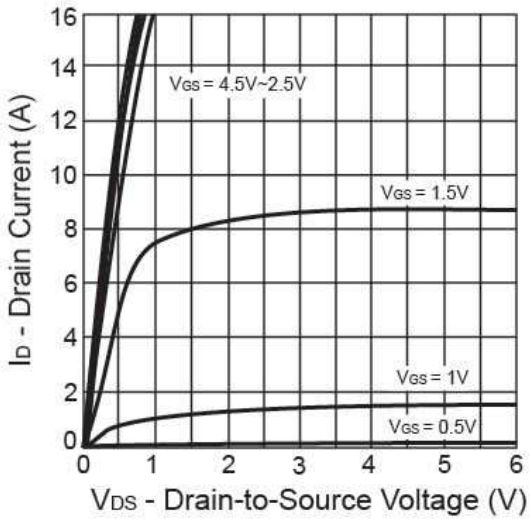
Switching Test Circuit



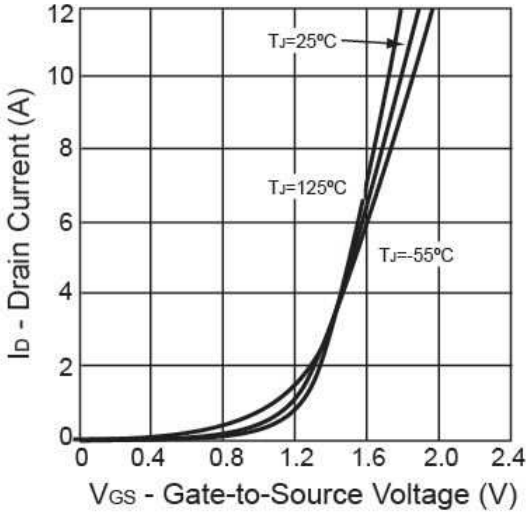
Switchin Waveforms

Electrical Characteristics Curve

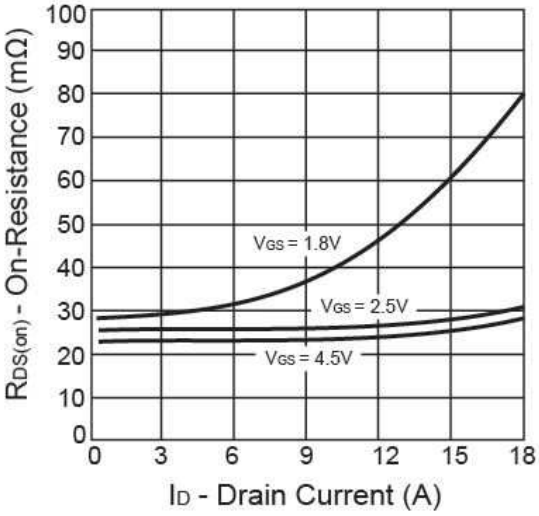
Output Characteristics



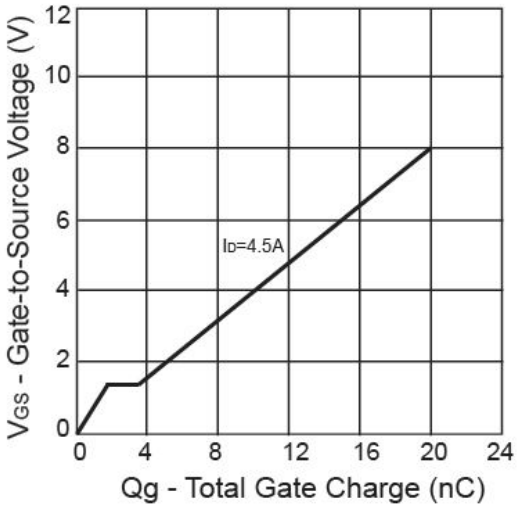
Transfer Characteristics



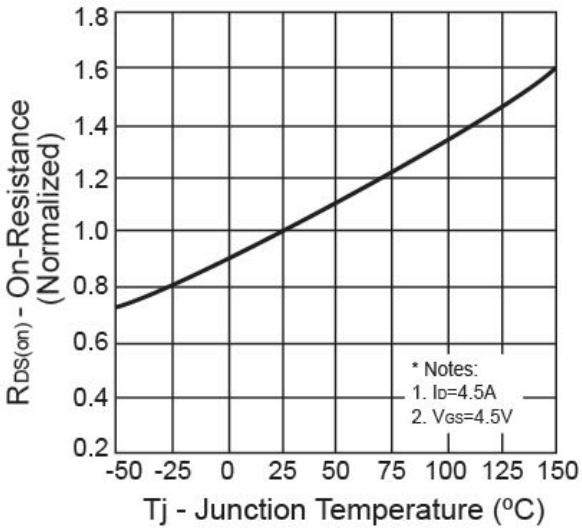
On-Resistance vs. Drain Current



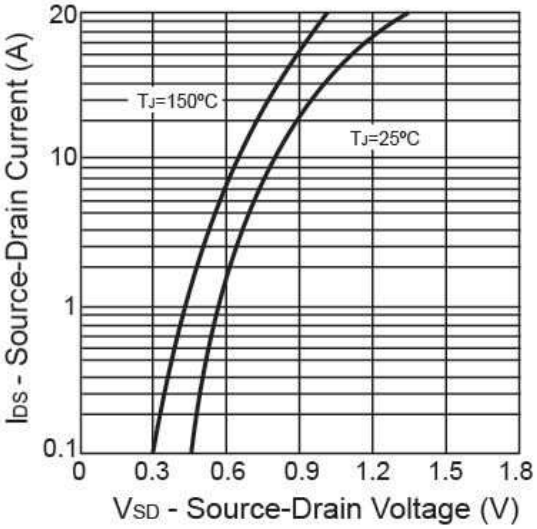
Gate Charge



On-Resistance vs. Junction Temperature

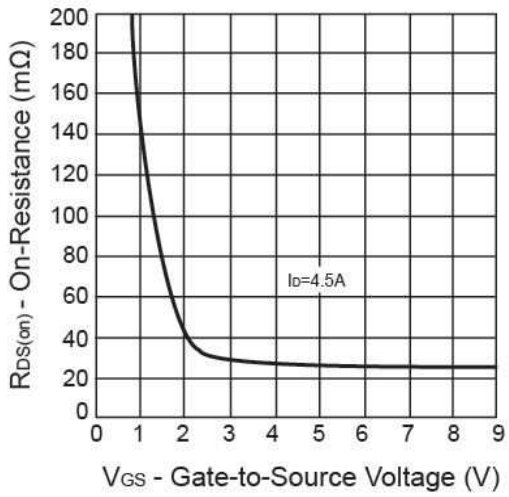


Source-Drain Diode Forward Voltage

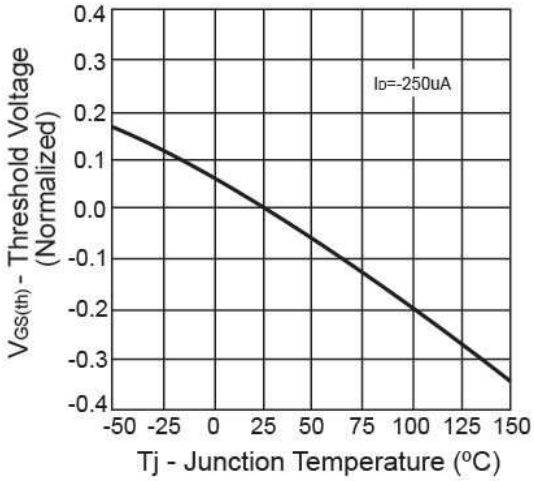


Electrical Characteristics Curve

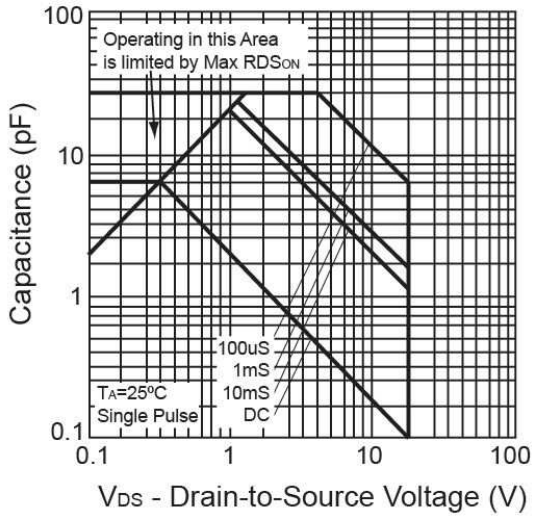
On-Resistance vs. Gate-Source Voltage



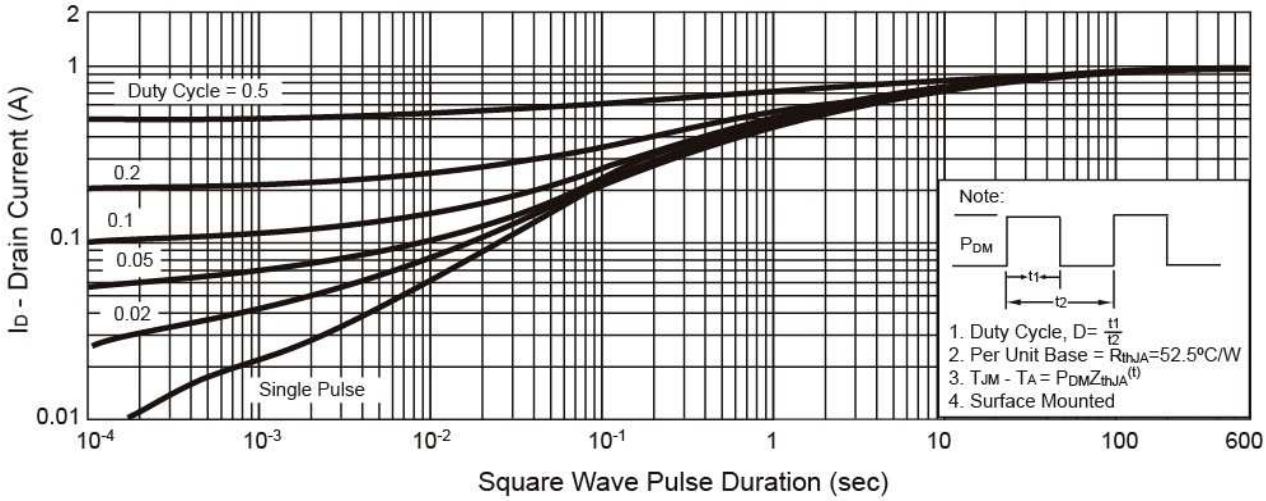
Threshold Voltage



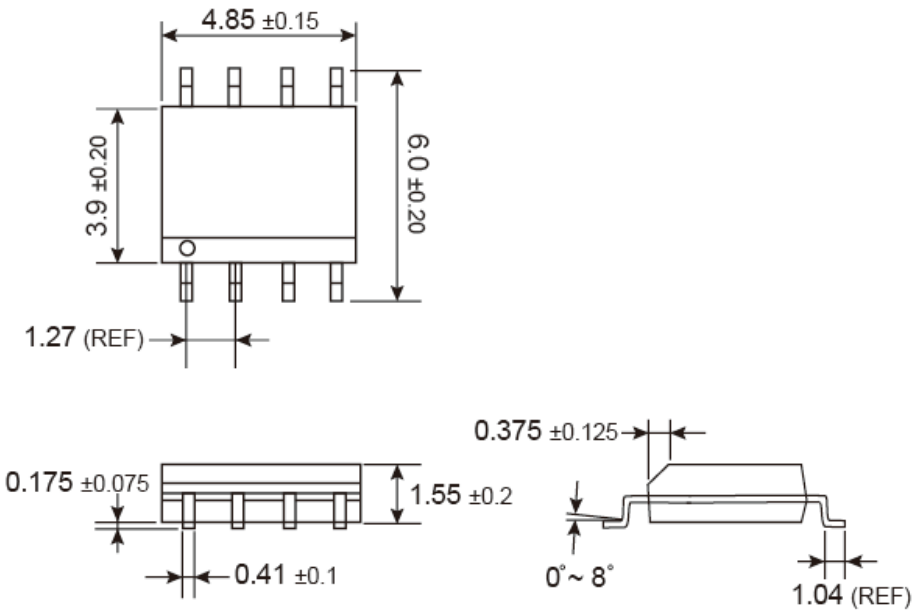
Safety Operation Area



Normalized Thermal Transient Impedance, Junction-to-Ambient



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**	=Apr
S	=May	**T**	=Jun	**U**	=Jul	**V**	=Aug
W	=Sep	**X**	=Oct	**Y**	=Nov	**Z**	=Dec

L = Lot Code

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