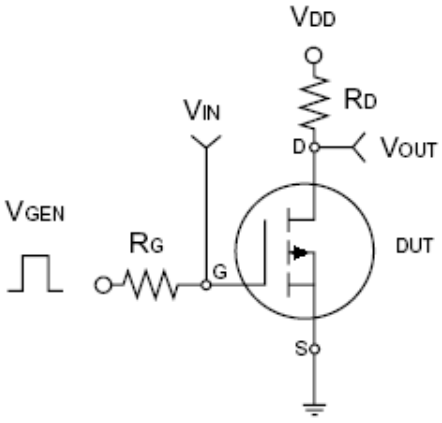
TSM4416D
30V Dual N-Channel MOSFET

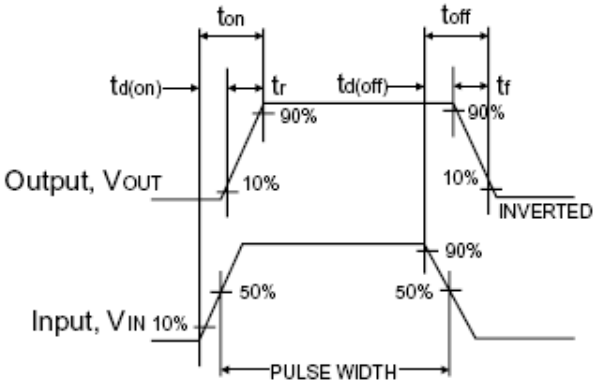
Electrical Specifications

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = 250uA	BV_{DSS}	30	--	--	V
Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250µA	$V_{GS(TH)}$	1	1.8	3	V
Gate Body Leakage	V_{GS} = ±20V, V_{DS} = 0V	I_{GSS}	--	--	±100	nA
Zero Gate Voltage Drain Current	V_{DS} = 24V, V_{GS} = 0V	I_{DSS}	--	--	-1.0	uA
Drain-Source On-State Resistance	V_{GS} = 10V, I_D = 10A	$R_{DS(ON)}$	--	12	15	mΩ
	V_{GS} = 4.5V, I_D = 10A		--	16	24	
Forward Transconductance	I_S = 1A, V_{GS} = 0V	g_{fs}	--	17	--	S
Diode Forward Voltage	V_{GS} = 0V, I_D = 250uA	V_{SD}	--	0.71	1.0	V
Dynamic[b]						
Total Gate Charge	V_{DS} = 15V, I_D = 10A, V_{GS} = 5V	Q_g	--	7.7	10.01	nC
Gate-Source Charge		Q_{gs}	--	1.6	2.08	
Gate-Drain Charge		Q_{gd}	--	3.1	4.03	
Input Capacitance	V_{DS} = 15V, V_{GS} = 0V, f = 1.0MHz	C_{iss}	--	890	--	pF
Output Capacitance		C_{oss}	--	159.6	--	
Reverse Transfer Capacitance		C_{rss}	--	83.2	--	
Switching[b,c]						
Turn-On Delay Time	V_{DD} = 15V, I_D = 10A, V_{GEN} = 10V, R_G = 0.3Ω	$t_{d(on)}$	--	11.1	22.2	nS
Turn-On Rise Time		t_r	--	8.4	16.8	
Turn-Off Delay Time		$t_{d(off)}$	--	25.3	50.6	
Turn-Off Fall Time		t_f	--	2.8	5.6	

Notes:
a. pulse test: PW ≤300µS, duty cycle ≤2%
b. For DESIGN AID ONLY, not subject to production testing.
c. Switching time is essentially independent of operating temperature.



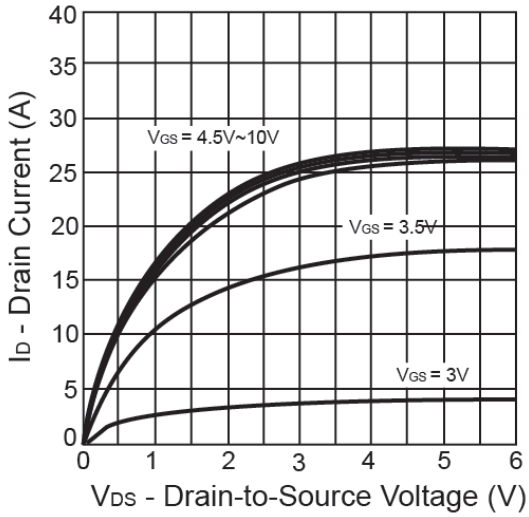
Switching Test Circuit



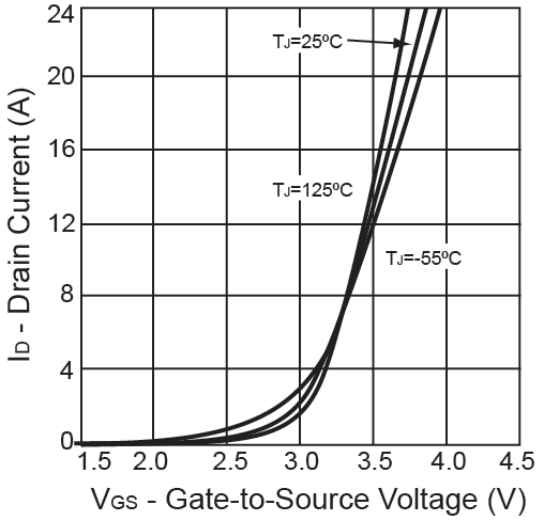
Switchin Waveforms

Electrical Characteristics Curve (T_A=25°C, unless otherwise noted)

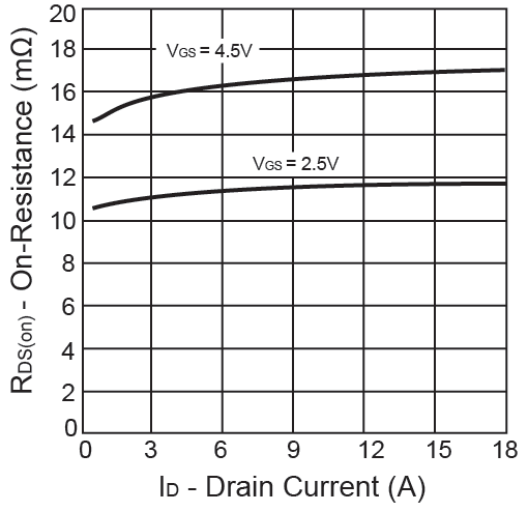
Output Characteristics



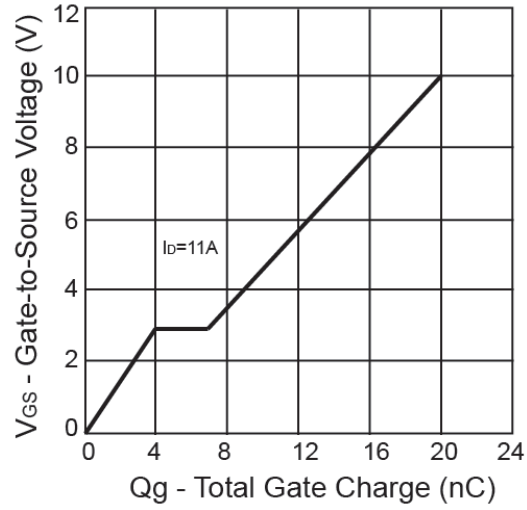
Transfer Characteristics



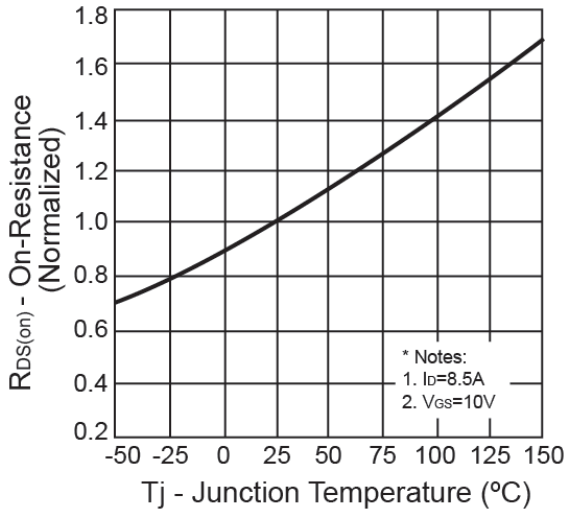
On-Resistance vs. Drain Current



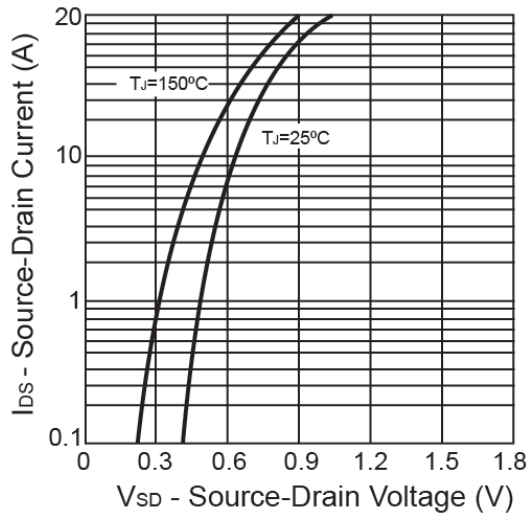
Gate Charge



On-Resistance vs. Junction Temperature

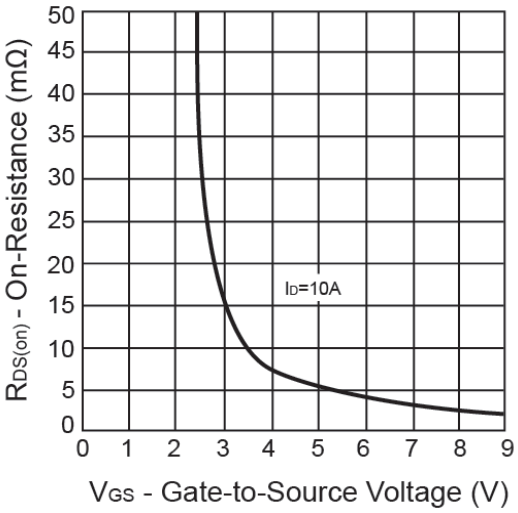


Source-Drain Diode Forward Voltage

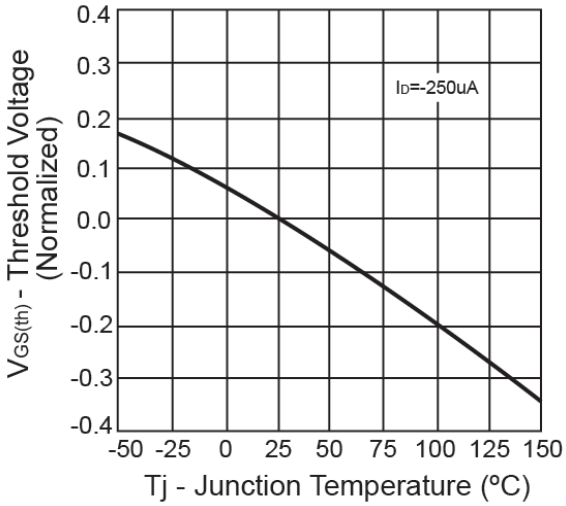


Electrical Characteristics Curve (T_A=25°C, unless otherwise noted)

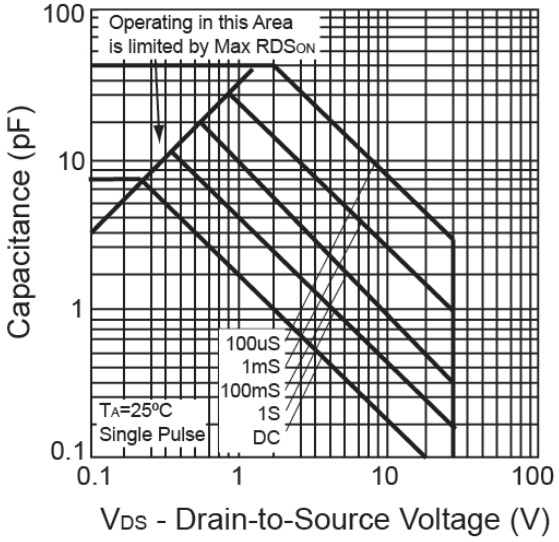
On-Resistance vs. Gate-Source Voltage



Threshold Voltage



Safety Operation Area



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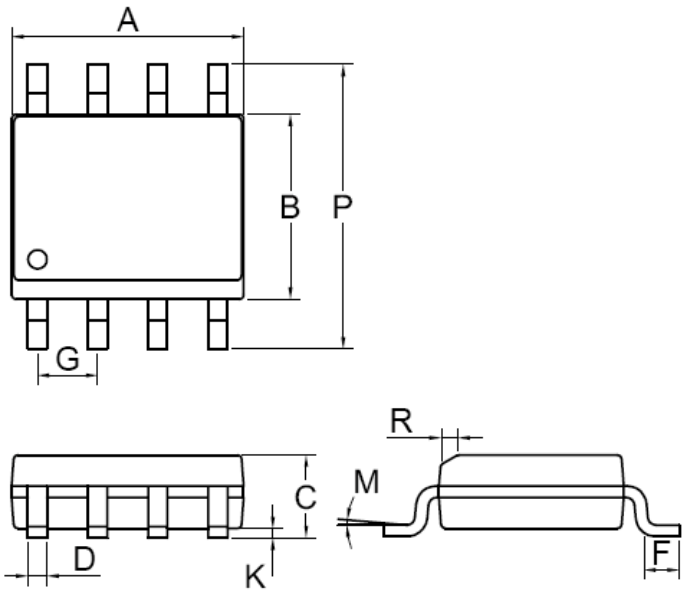
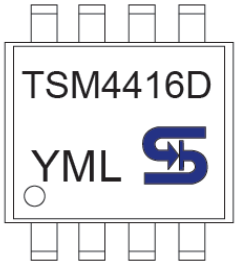
SOP-8 Mechanical Drawing



SOP-8 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX.
A	4.80	5.00	0.189	0.196
B	3.80	4.00	0.150	0.157
C	1.35	1.75	0.054	0.068
D	0.35	0.49	0.014	0.019
F	0.40	1.25	0.016	0.049
G	1.27BSC		0.05BSC	
K	0.10	0.25	0.004	0.009
M	0º	7º	0º	7º
P	5.80	6.20	0.229	0.244
R	0.25	0.50	0.010	0.019

Marking Diagram



Y = Year Code

M = Month Code
(**A**=Jan, **B**=Feb, **C**=Mar, **D**=Apl, **E**=May, **F**=Jun, **G**=Jul, **H**=Aug, **I**=Sep, **J**=Oct, **K**=Nov, **L**=Dec)
= 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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