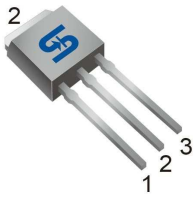
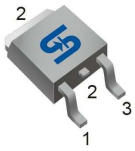
TSM600N25E

250V N-Channel Power MOSFET

TO-251 (IPAK)



TO-252 (DPAK)



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

Key Parameter Performance

Parameter	Value	Unit
V_{DS}	250	V
$R_{DS(on)}$(max)	0.6	Ω
Q_g	8.4	nC

Features

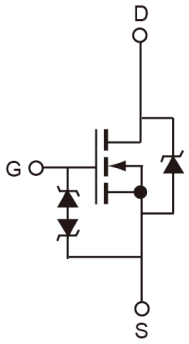
- 100% avalanche tested
- Improved ESD performance

Ordering Information

Part No.	Package	Packing
TSM600N25ECH C5G	TO-251	75pcs / Tube
TSM600N25ECP ROG	TO-252	2.5kpcs / 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



N-Channel MOSFET

Absolute Maximum Ratings

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	250	V
Gate-Source Voltage		V_{GS}	±30	V
Continuous Drain Current	Tc = 25ºC	I_D	8	A
	Tc = 100ºC		3.6	A
Pulsed Drain Current (Note 1)		I_{DM}	32	A
Single Pulse Avalanche Energy (Note 2)		E_{AS}	147	mJ
Repetitive Avalanche Current (Note 1)		I_{AR}	8	A
Repetitive Avalanche Energy (Note 1)		E_{AR}	5.2	mJ
Power Dissipation @ T_C = 25°C		P_D	52	W
Peak Diode Recovery (Note 3)		dv/dt	4.5	V/ns
Operating Junction Temperature		T_J	150	ºC
Storage Temperature Range		T_{STG}	-55 to +150	°C

Thermal Performance

Parameter	Symbol	Limit	Unit
Thermal Resistance - Junction to Case	$R_{\Theta JC}$	2.4	°C/W
Thermal Resistance - Junction to Ambient	$R_{\Theta JA}$	110	

TSM600N25E

250V N-Channel Power MOSFET

Pb-Free RoHS COMPLIANT

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

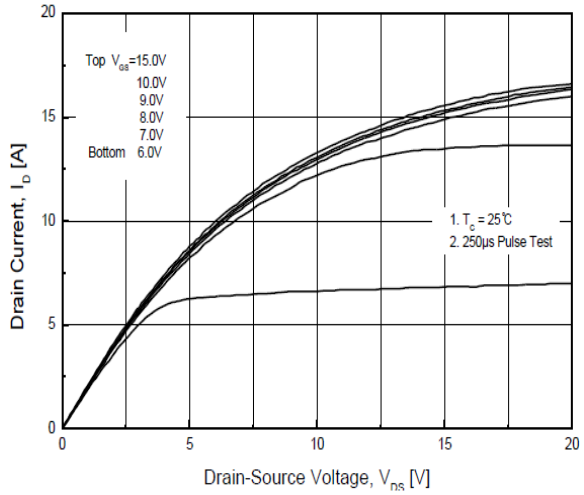
Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = 250μA	BV_{DSS}	250	--	--	V
Drain-Source On-State Resistance	V_{GS} = 10V, I_D = 4A	$R_{DS(ON)}$	--	0.5	0.6	Ω
Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	$V_{GS(TH)}$	3	--	5	V
Zero Gate Voltage Drain Current	V_{DS} = 250V, V_{GS} = 0V	I_{DSS}	--	--	1	μA
	V_{DS} = 200V, Tc = 125ºC		--	--	10	
Gate Body Leakage	V_{GS} = ±30V, V_{DS} = 0V	I_{GSS}	--	--	±100	μA
Forward Transconductance (Note 4)	V_{DS} = 30V, I_D = 4A	g_{fs}	--	7.5	--	S
Dynamic						
Total Gate Charge (Note 4,5)	V_{DS} = 200V, I_D = 8A, V_{GS} = 10V	Q_g	--	8.4	--	nC
Gate-Source Charge (Note 4,5)		Q_{gs}	--	1.9	--	
Gate-Drain Charge (Note 4,5)		Q_{gd}	--	4	--	
Input Capacitance	V_{DS} = 25V, V_{GS} = 0V, f = 1.0MHz	C_{iss}	--	423	--	pF
Output Capacitance		C_{oss}	--	74	--	
Reverse Transfer Capacitance		C_{rss}	--	12	--	
Switching						
Turn-On Delay Time (Note 4,5)	V_{DD} = 125V, I_D = 8A, R_{GEN} =25Ω	$t_{d(on)}$	--	14	--	ns
Turn-On Rise Time (Note 4,5)		t_r	--	25	--	
Turn-Off Delay Time (Note 4,5)		$t_{d(off)}$	--	30	--	
Turn-Off Fall Time (Note 4,5)		t_f	--	14	--	
Source-Drain Diode Ratings and Characteristic						
Maximum Continuous Drain-Source Diode Forward Current		I_S	--	--	8	A
Maximum Pulse Drain-Source Diode Forward Current		I_{SM}	--	--	32	A
Diode-Source Forward Voltage	V_{GS} = 0V, I_S = 8A	V_{SD}	--	--	1.5	V
Reverse Recovery Time (Note 4)	V_{GS} = 0V, I_S = 8A, dI_F/dt = 100A/μs	t_{rr}	--	157	--	ns
Reverse Recovery Charge (Note 4)		Q_{rr}	--	0.6	--	μC

Note:

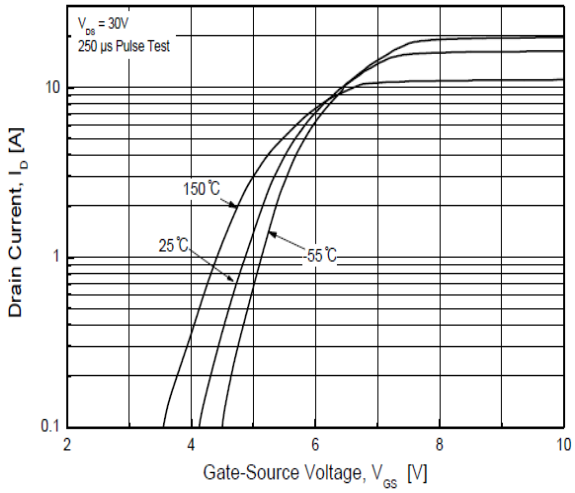
1. Pulse width limited by safe operating area
2. L=3.68mH, I_{AS} =8A, V_{DD} = 50V, R_G = 25Ω, Starting T_J = 25ºC
3. I_{SD} ≤8A, di/dt ≤ 200A/μs, V_{DD} ≤ BV_{DS}, Starting T_J=25℃
4. Pulse test: pulse width ≤300μs, duty cycle ≤2%
5. Switching time is essentially independent of operating temperature.

Electrical Characteristics Curves

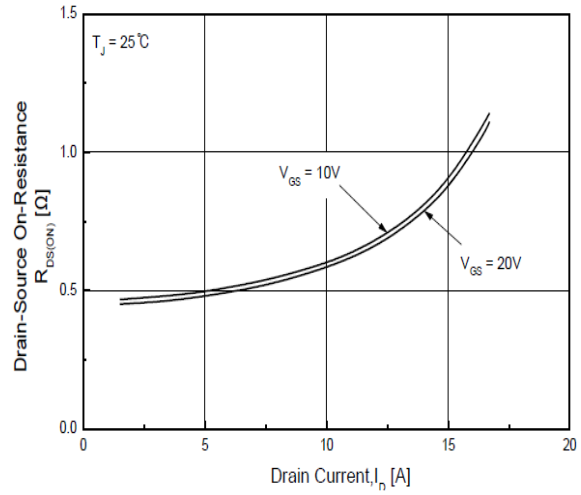
Output Characteristics



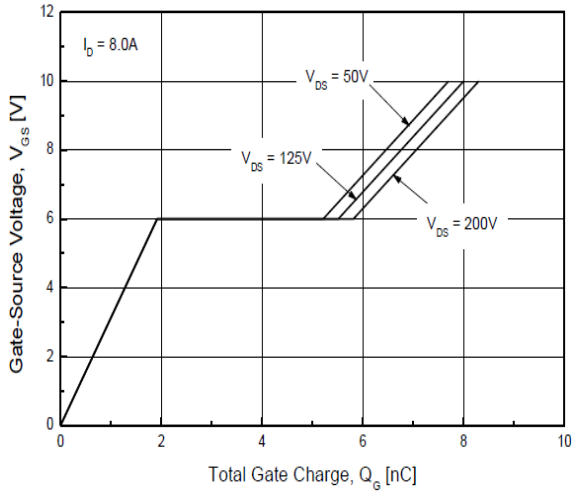
Transfer Characteristics



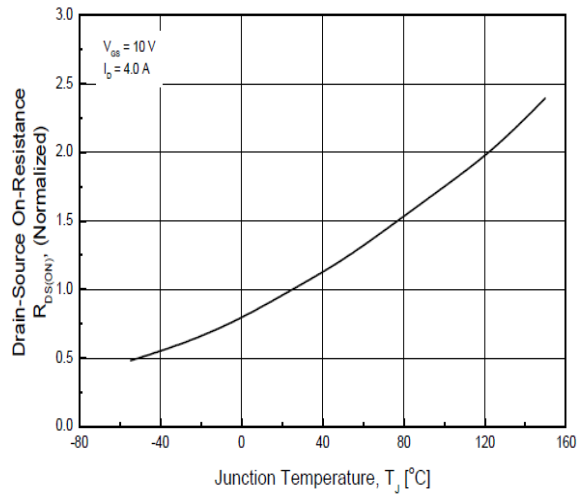
On-Resistance vs. Drain Current



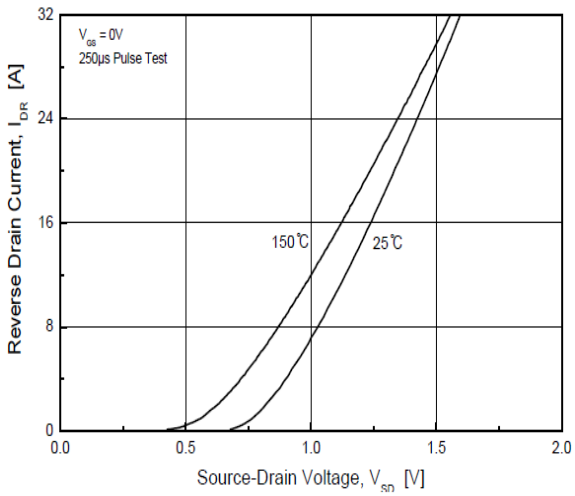
Gate Charge



On-Resistance vs. Junction Temperature



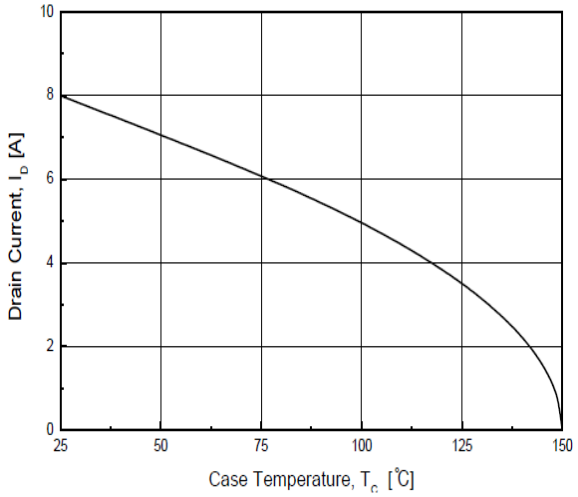
Source-Drain Diode Forward Voltage



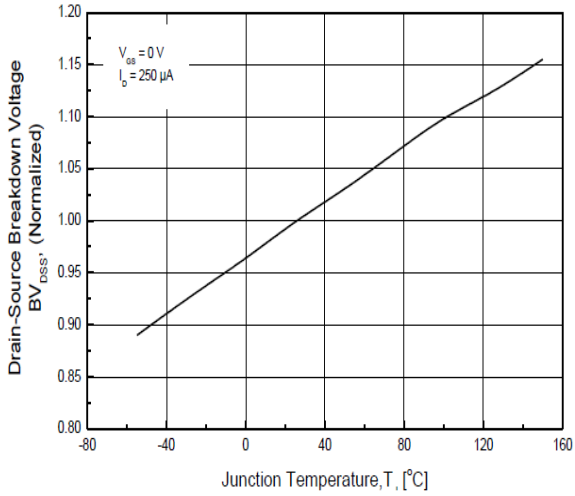
Pb-Free RoHS COMPLIANT

Electrical Characteristics Curves

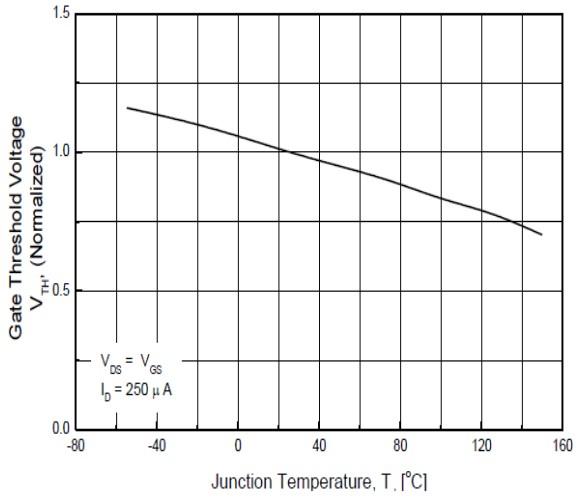
Drain Current vs. Case Temperature



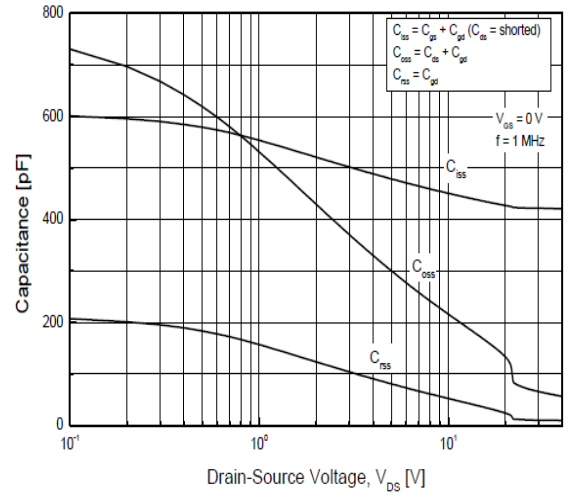
BV_{DSS} vs. Junction Temperature



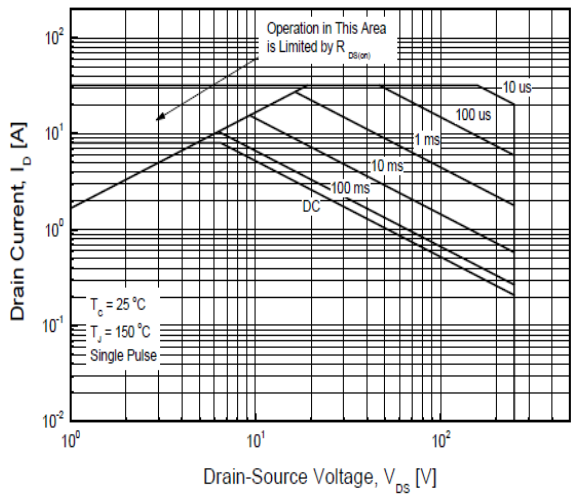
V_{TH} vs. Junction Temperature



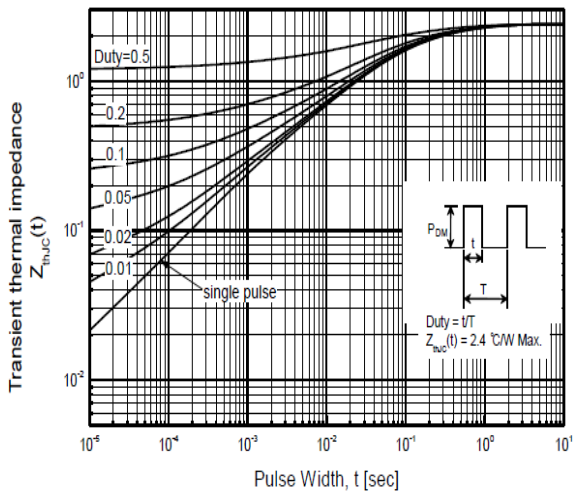
Capacitance vs. Drain-Source Voltage



Maximum Safe Operating Area

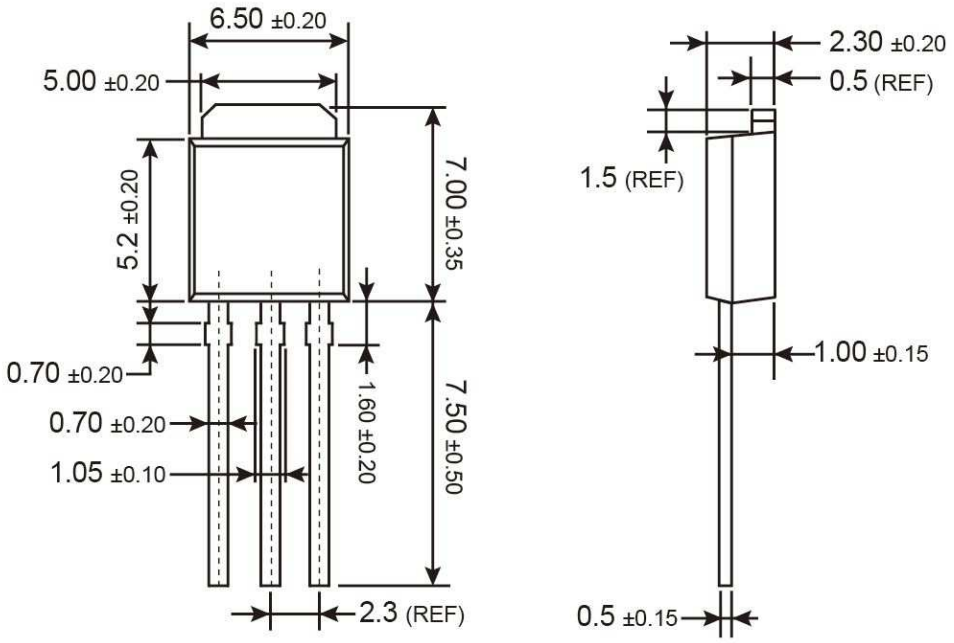


Transient Thermal Impedance



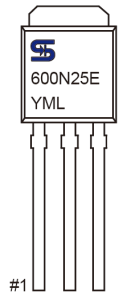
Pb-Free RoHS COMPLIANT

TO-251 Mechanical Drawing



Unit: Millimeters

Marking Diagram

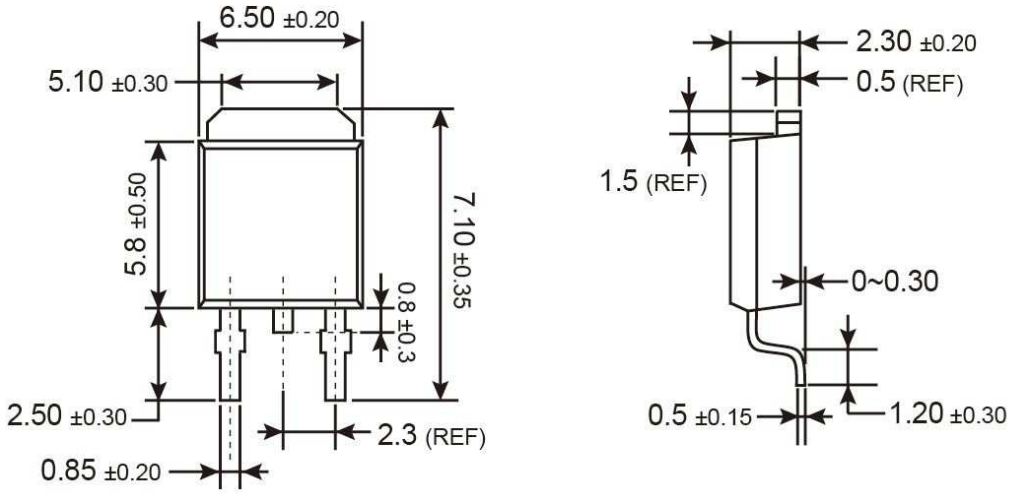


Y = Year Code

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)

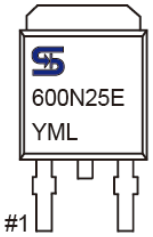
L = Lot Code

TO-252 Mechanical Drawing



Unit: Millimeters

Marking Diagram



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- Консультации по применению компонента;
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- Техническая поддержка проекта;
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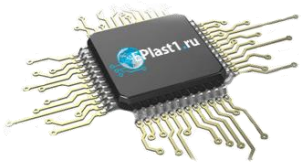

Как с нами связаться

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