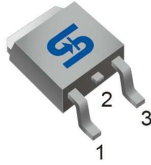


**TO-252
(DPAK)**



Pin Definition:

1. Gate
2. Drain
3. Source

PRODUCT SUMMARY

V_{DS} (V)	$R_{DS(on)}$ (m Ω)	I_D (A)
100	37 @ $V_{GS}=10V$	32

Features

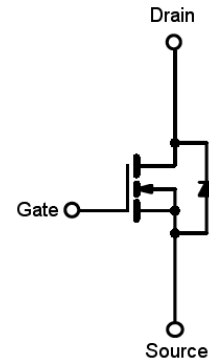
- Advanced Trench Technology
- Low $R_{DS(on)}$ 37m Ω (Max.)
- Low gate charge typical @ 34nC (Typ.)
- Low C_{rss} typical @ 45pF (Typ.)

Ordering Information

Part No.	Package	Packing
TSM35N10CP ROG	TO-252	2.5Kpcs / 13" Reel

Note: "G" denote for Halogen Free Product

Block Diagram



N-Channel MOSFET

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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	$T_C=25^\circ\text{C}$	32
		$T_C=70^\circ\text{C}$	26
		$T_A=25^\circ\text{C}$	5
		$T_A=70^\circ\text{C}$	4
Drain Current-Pulsed Note 1	I_{DM}	70	A
Avalanche Current, L=0.1mH	I_{AS}, I_{AR}	35	A
Avalanche Energy, L=0.1mH	E_{AS}, E_{AR}	61	mJ
Maximum Power Dissipation	P_D	$T_C=25^\circ\text{C}$	83.3
		$T_C=70^\circ\text{C}$	53.3
		$T_A=25^\circ\text{C}$	2
		$T_A=70^\circ\text{C}$	1.3
Storage Temperature Range	T_{STG}	-55 to +150	$^\circ\text{C}$
Operating Junction Temperature Range	T_J	-55 to +150	$^\circ\text{C}$

* Limited by maximum junction temperature

Thermal Performance

Parameter	Symbol	Limit	Unit
Thermal Resistance - Junction to Case	$R_{\theta_{JC}}$	1.5	$^\circ\text{C/W}$
Thermal Resistance - Junction to Ambient	$R_{\theta_{JA}}$	62	$^\circ\text{C/W}$

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

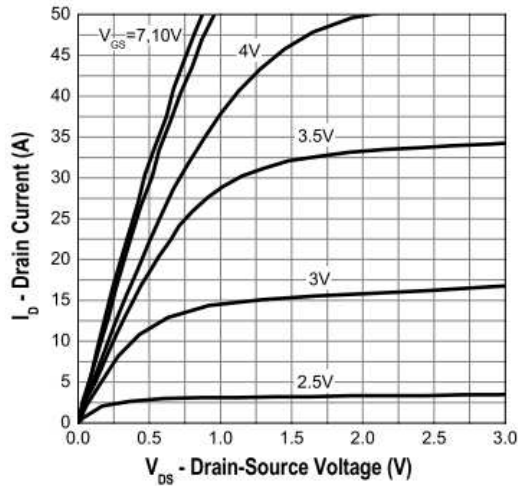
Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 250uA	BV _{DSS}	100	--	--	V
Drain-Source On-State Resistance	V _{GS} = 10V, I _D = 10A	R _{DS(ON)}	--	30	37	mΩ
	V _{GS} = 4.5V, I _D = 10A	R _{DS(ON)}	--	32	42	mΩ
Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250uA	V _{GS(TH)}	1	2	3	V
Zero Gate Voltage Drain Current	V _{DS} = 100V, V _{GS} = 0V	I _{DSS}	--	--	1	uA
Gate Body Leakage	V _{GS} = ±20V, V _{DS} = 0V	I _{GSS}	--	--	±100	nA
Dynamic						
Total Gate Charge	V _{DS} = 50V, I _D = 10A, V _{GS} = 10V	Q _g	--	34	--	nC
Gate-Source Charge		Q _{gs}	--	6	--	
Gate-Drain Charge		Q _{gd}	--	9	--	
Input Capacitance	V _{DS} = 30V, V _{GS} = 0V, f = 1.0MHZ	C _{iss}	--	1598	--	pF
Output Capacitance		C _{oss}	--	132	--	
Reverse Transfer Capacitance		C _{rss}	--	45	--	
Switching						
Turn-On Delay Time	V _{GS} = 10V, V _{DS} = 50V, R _G = 3Ω	t _{d(on)}	--	7	--	nS
Turn-On Rise Time		t _r	--	7	--	
Turn-Off Delay Time		t _{d(off)}	--	29	--	
Turn-Off Fall Time		t _f	--	7	--	
Drain-Source Diode Characteristics and Maximum Rating						
Drain-Source Diode Forward Voltage	V _{GS} =0V, I _S =10A	V _{SD}	--	0.7	--	V
Reverse Recovery Time	I _S = 10A, T _J =25 °C	t _{fr}	--	32	--	nS
Reverse Recovery Charge	dI/dt = 500A/us	Q _{fr}	--	200	--	nC

Notes:

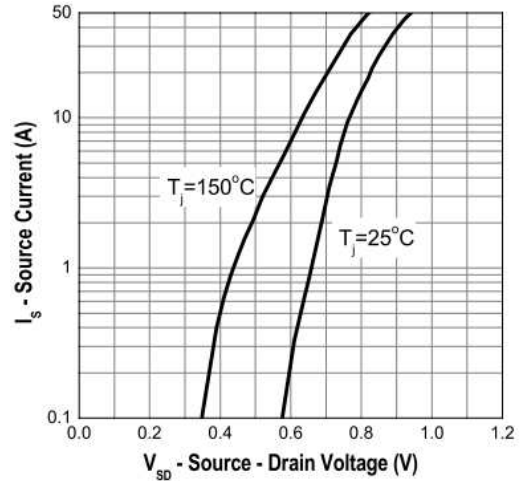
- Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
- $R_{\theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. $R_{\theta JC}$ is guaranteed by design while $R_{\theta CA}$ is determined by the user's board design. $R_{\theta JA}$ shown below for single device operation on FR-4 in still air

Electrical Characteristics Curve ($T_c = 25^\circ\text{C}$, unless otherwise noted)

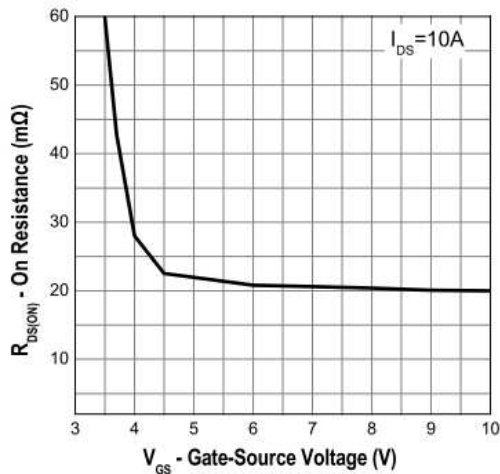
Output Characteristics



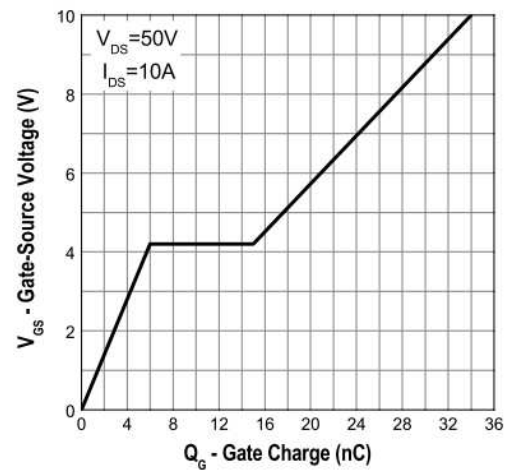
Transfer Characteristics



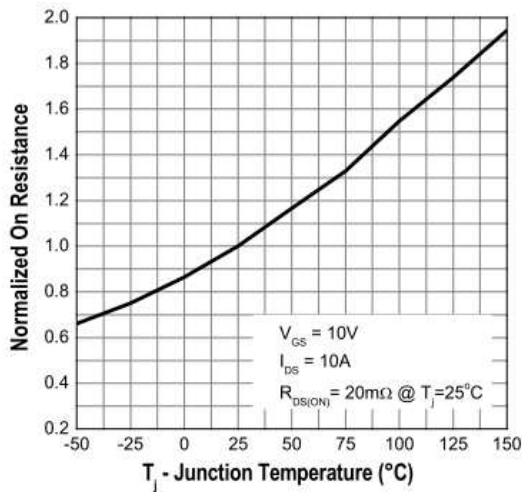
On-Resistance vs. Gate-Source Voltage



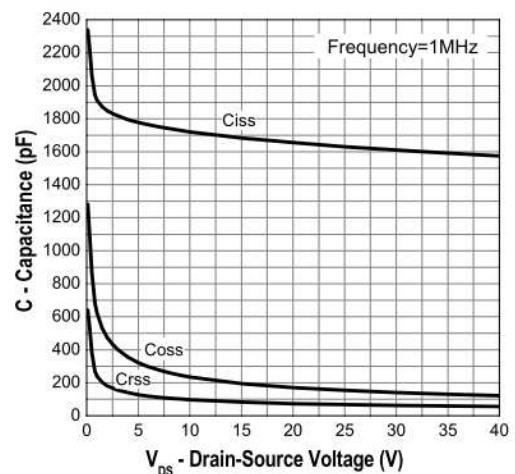
Gate Charge



On-Resistance vs. Junction Temperature

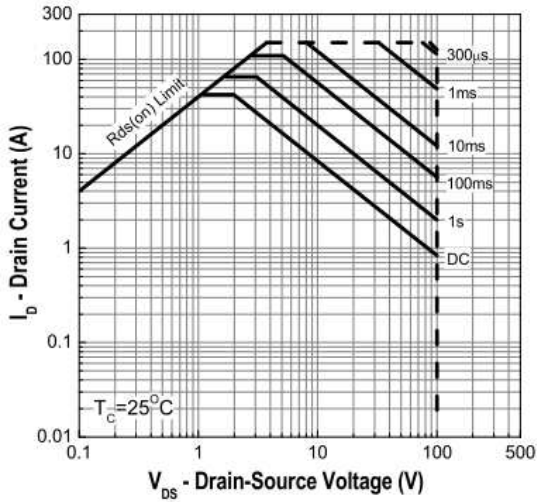


Capacitance

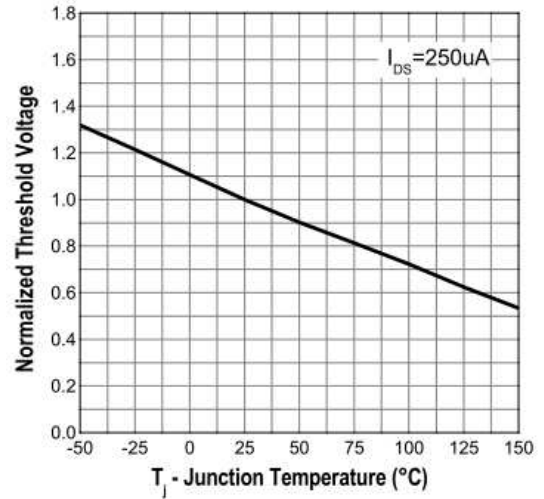


Electrical Characteristics Curve (Ta = 25°C, unless otherwise noted)

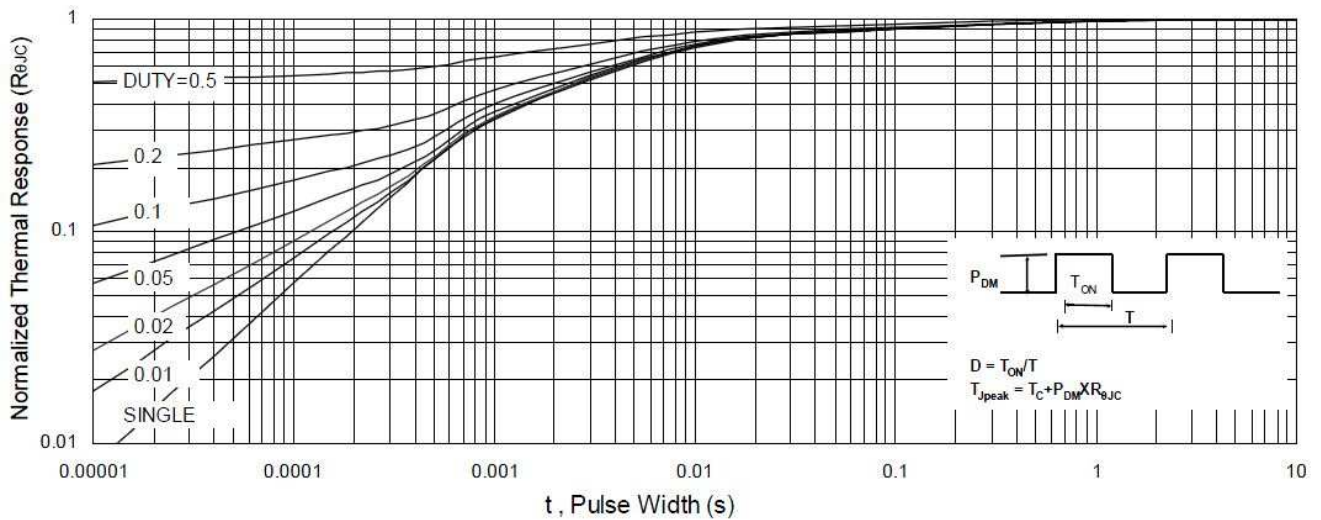
Maximum Safe Operating Area



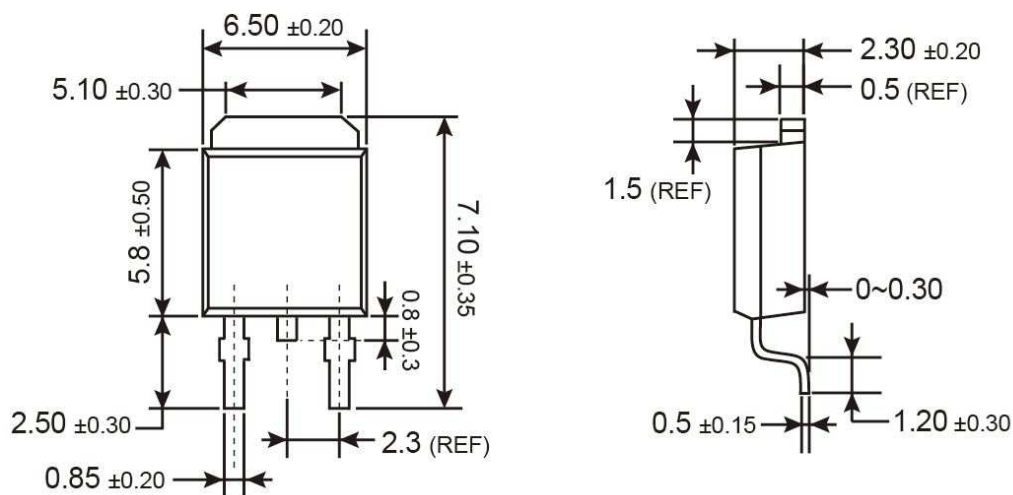
Threshold Voltage vs. Temperature



Normalized Thermal Transient Impedance, Junction-to-Ambient

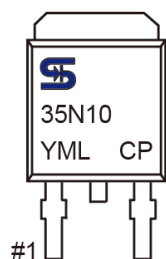


TO-252 Mechanical Drawing



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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