TSM210N02CX

20V N-Channel Power MOSFET

Pb-Free RoHS COMPLIANT

SOT-23



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

Note:
MSL 1 (Moisture Sensitivity Level) per J-STD-020

Key Parameter Performance

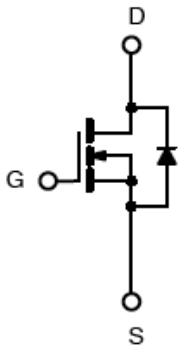
Parameter		Value	Unit
V_{DS}		20	V
$R_{DS(on)}$ (max)	V_{GS} = 4.5V	21	mΩ
	V_{GS} = 2.5V	25	
	V_{GS} = 1.8V	32	
Q_g		5.8	nC

Ordering Information

Ordering code	Package	Packing
TSM210N02CX RFG	SOT-23	3kpcs / 7” Reel

Note: Halogen-free according to IEC 61249-2-21 definition

Block Diagram



N-Channel MOSFET

Absolute Maximum Ratings (T_C = 25°C unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	±10	V
Continuous Drain Current	T_C = 25°C	I_D	6.7	A
	T_C = 100°C		4.2	A
Pulsed Drain Current (Note 1)		I_{DM}	26.8	A
Power Dissipation @ T_C = 25°C		P_D	1.56	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	- 55 to +150	°C

Thermal Performance

Parameter	Symbol	Limit	Unit
Thermal Resistance - Junction to Ambient	$R_{\Theta JA}$	80	°C/W

Pb-Free RoHS COMPLIANT

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

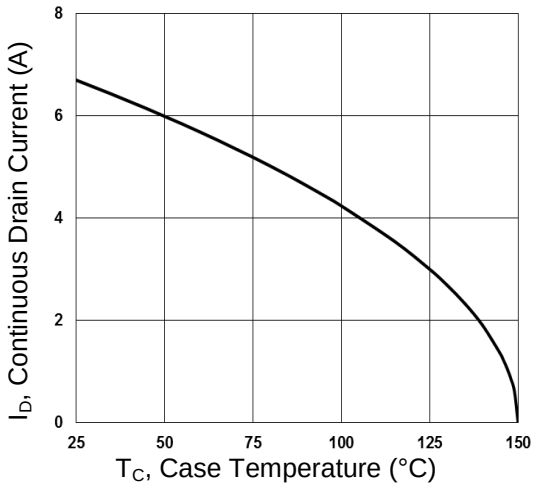
Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = 250μA	BV_{DSS}	20	--	--	V
Drain-Source On-State Resistance	V_{GS} = 4.5V, I_D = 4A	$R_{DS(ON)}$	--	19	21	mΩ
	V_{GS} = 2.5V, I_D = 3A		--	22	25	
	V_{GS} = 1.8V, I_D = 2A		--	26	32	
Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	$V_{GS(TH)}$	0.3	0.6	0.8	V
Zero Gate Voltage Drain Current	V_{DS} = 20V, V_{GS} = 0V	I_{DSS}	--	--	1	μA
	V_{DS} = 16V, T_J = 125°C		--	--	10	
Gate Body Leakage	V_{GS} = ±10V, V_{DS} = 0V	I_{GSS}	--	--	±100	nA
Forward Transconductance (Note 2)	V_{DS} = 10V, I_S = 4A	g_{fs}	--	9.5	--	S
Dynamic						
Total Gate Charge (Note 2,3)	V_{DS} = 10V, I_D = 4A, V_{GS} = 4.5V	Q_g	--	5.8	--	nC
Gate-Source Charge (Note 2,3)		Q_{gs}	--	0.6	--	
Gate-Drain Charge (Note 2,3)		Q_{gd}	--	2	--	
Input Capacitance	V_{DS} = 10V, V_{GS} = 0V, f = 1.0MHz	C_{iss}	--	600	--	pF
Output Capacitance		C_{oss}	--	70	--	
Reverse Transfer Capacitance		C_{rss}	--	45	--	
Switching						
Turn-On Delay Time (Note 2,3)	V_{DD} = 10V, I_D = 1A, V_{GS} = 4.5V, R_{GEN} =25Ω	$t_{d(on)}$	--	5.0	--	ns
Turn-On Rise Time (Note 2,3)		t_r	--	14.4	--	
Turn-Off Delay Time (Note 2,3)		$t_{d(off)}$	--	30.0	--	
Turn-Off Fall Time (Note 2,3)		t_f	--	9.2	--	
Source-Drain Diode Ratings and Characteristic						
Maximum Continuous Drain-Source Diode Forward Current	Integral reverse diode in the MOSFET	I_S	--	--	6.7	A
Maximum Pulse Drain-Source Diode Forward Current		I_{SM}	--	--	26.8	A
Diode-Source Forward Voltage	V_{GS} = 0V, I_S = 1A	V_{SD}	--	--	1	V

Note:

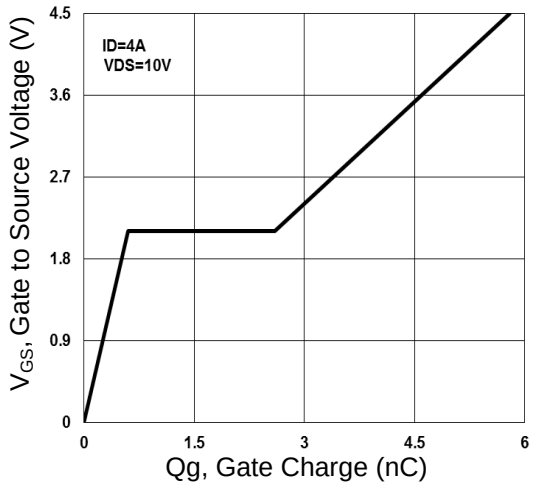
1. Pulse width limited by safe operating area
2. Pulse test: pulse width ≤ 300μs, duty cycle ≤ 2%
3. Switching time is essentially independent of operating temperature.

Electrical Characteristics Curve

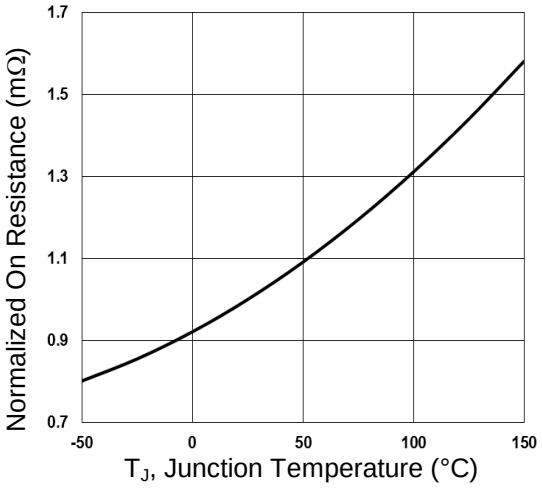
Continuous Drain Current vs. T_C



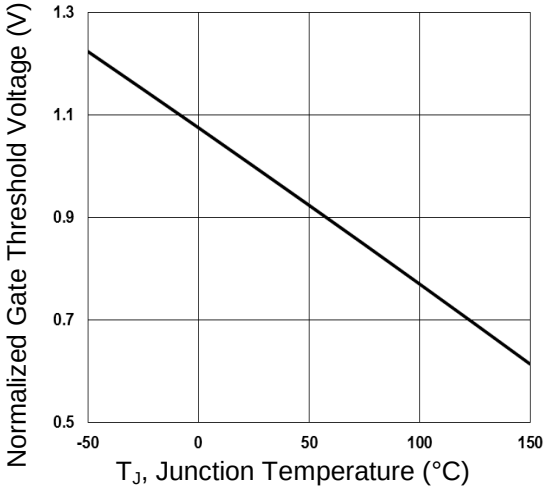
Gate Charge



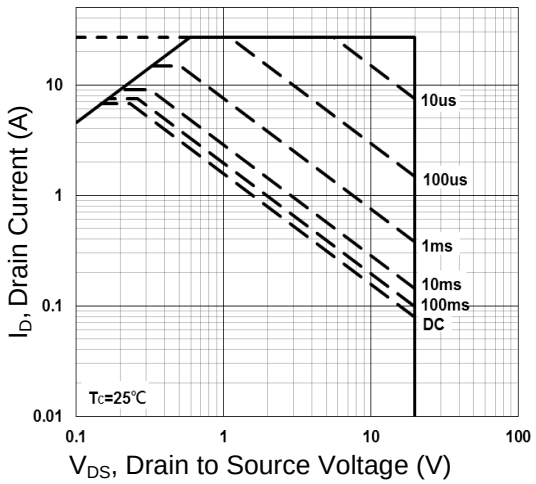
On-Resistance vs. Junction Temperature



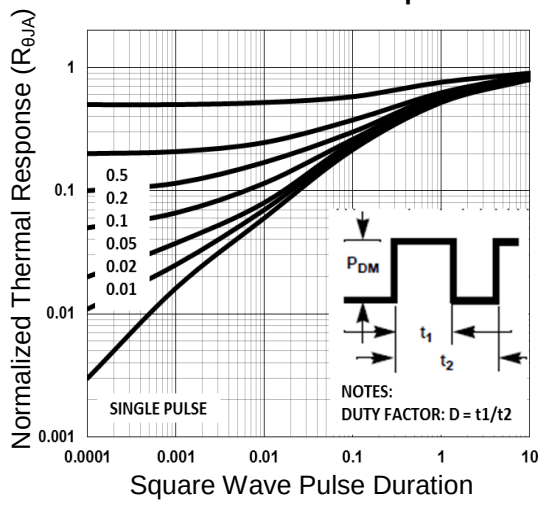
Threshold Voltage vs. Junction Temperature



Maximum Safe Operating Area

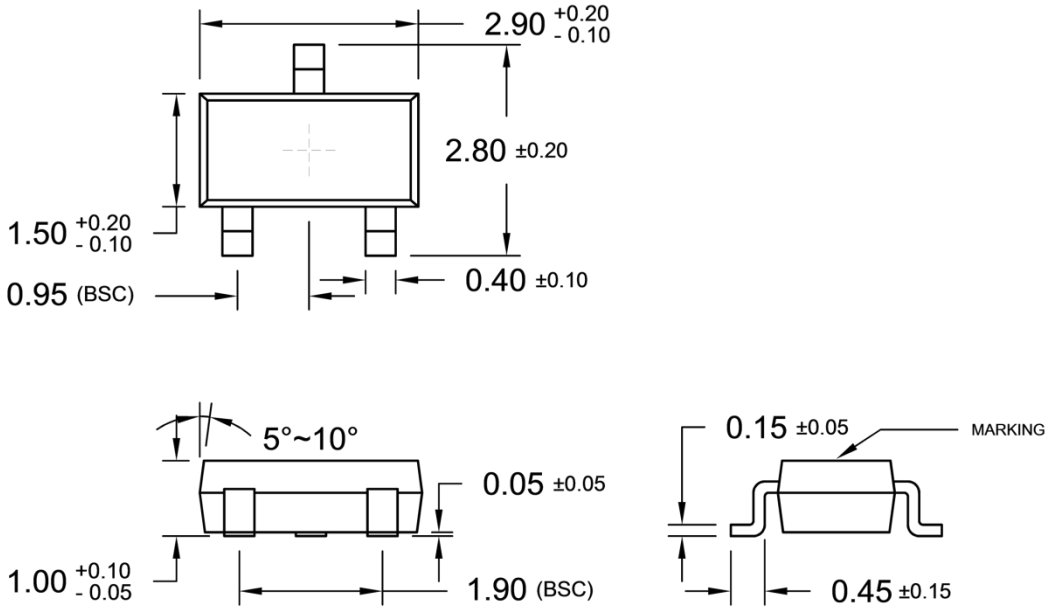


Normalized Thermal Transient Impedance Curve



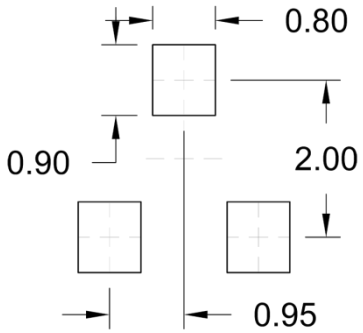
Pb-Free RoHS COMPLIANT

SOT-23 Mechanical Drawing

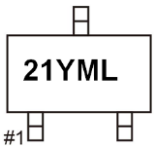


Unit: Millimeters

SUGGESTED PAD LAYOUT (Unit: Millimeters)



Marking Diagram



21 = Device Code
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

Notice

Specifications of the products displayed herein are subject to change without notice. TSC or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Information contained herein is intended to provide a product description only. No license, express or implied, to any intellectual property rights is granted by this document. Except as provided in TSC's terms and conditions of sale for such products, TSC assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of TSC products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify TSC for any damages resulting from such improper use or sale.

ENTEGRECİ

Bu belge www.entegreci.com üzerinden sunulmaktadır.

Elektronik komponent tedarikinde Entegreci

Entegreci, Eskişehir merkezli, Türkiye geneline satış yapan bir elektronik komponent mağazasıdır. Entegreler (IC), mikrodenetleyiciler, transistörler, diyotlar, pasif elemanlar, konnektörler, modüller ve geliştirme kartları tek adetten seri üretim adetlerine kadar satılır. Ürün sayfalarında güncel stok durumunu, fiyatı ve datasheet bağlantısını bulabilirsiniz.

Parça koduyla arama

Üretici parça numarasını yazın; stok ve fiyatı hemen görün.

www.entegreci.com

Ürün kategorileri

Entegreden kapasitöre tüm elektronik komponent kategorileri.

Kategorilere göz atın

Üreticiler

Aradığınız üreticinin ürünlerini tek sayfada inceleyin.

Üreticileri görün

Toplu alım ve teklif

Listede olmayan ya da yüksek adetli parçalar için teklif isteyin.

Teklif isteyin

www.entegreci.com | **destek@entegreci.com** | **0850 305 90 34**

Entegreci is an online electronic components store based in Türkiye. Search by manufacturer part number to see stock, prices and datasheets for integrated circuits, microcontrollers, transistors, passive components and connectors, or request a quote for parts that are not listed.

Bu sayfa Entegreci tarafından eklenmiştir. Belgenin önceki sayfaları asıl yayıncısına aittir ve içeriği değiştirilmemiştir; en güncel sürüm için belgenin yayıncısına başvurun.