

N-Channel Enhancement-Mode MOSFET Transistor

Product Summary

$V_{(BR)DSS}$ Min (V)	$r_{DS(on)}$ Max (Ω)	$V_{GS(th)}$ (V)	I_D (A)
200	11	0.8 to 3.0	0.12

Features

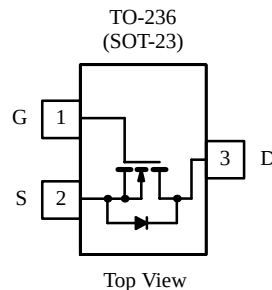
- Low On-Resistance: 9.5 Ω
- Secondary Breakdown Free: 220 V
- Low Power/Voltage Driven
- Low Input and Output Leakage
- Excellent Thermal Stability

Benefits

- Low Offset Voltage
- Full-Voltage Operation
- Easily Driven Without Buffer
- Low Error Voltage
- No High-Temperature “Run-Away”

Applications

- High-Voltage Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Transistors, etc.
- Telephone Mute Switches, Ringer Circuits
- Power Supply, Converters
- Motor Control



TN2010T (R1)*

*Marking Code for TO-236

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	200	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current ($T_J = 150^\circ\text{C}$)	$T_A = 25^\circ\text{C}$	I_D	0.12	A
	$T_A = 70^\circ\text{C}$		0.08	
Pulsed Drain Current ^a		I_{DM}	0.34	
Power Dissipation	$T_A = 25^\circ\text{C}$	P_D	0.35	W
	$T_A = 70^\circ\text{C}$		0.22	
Maximum Junction-to-Ambient		R_{thJA}	357	$^\circ\text{C/W}$
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150	$^\circ\text{C}$

Notes

a. Pulse width limited by maximum junction temperature.

Updates to this data sheet may be obtained via facsimile by calling Siliconix FaxBack, 1-408-970-5600. Please request FaxBack document #70203.

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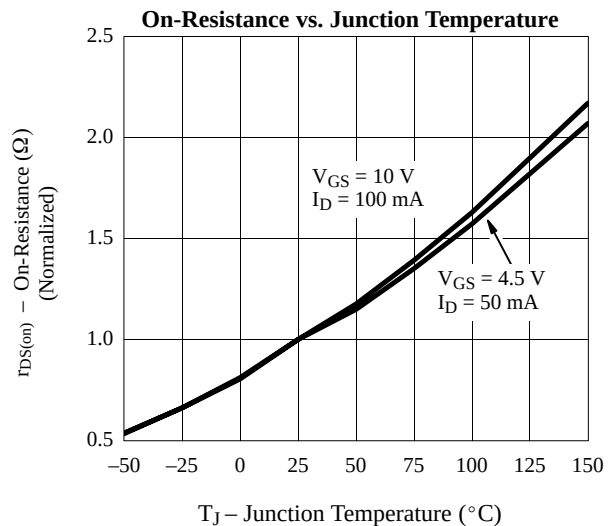
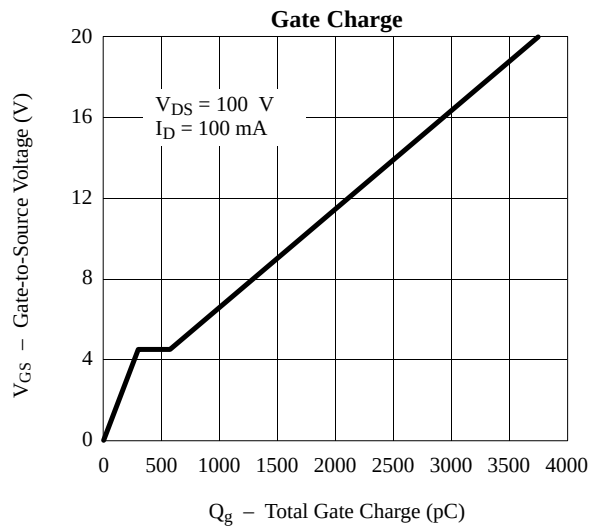
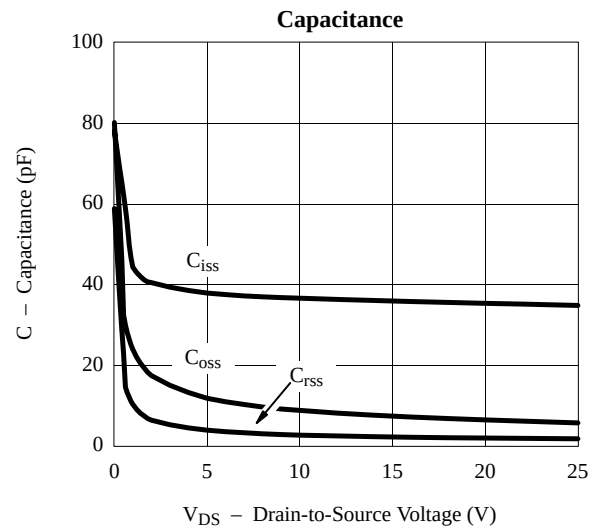
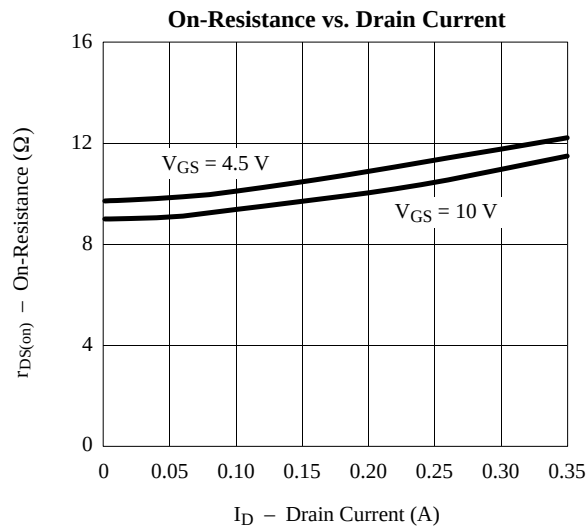
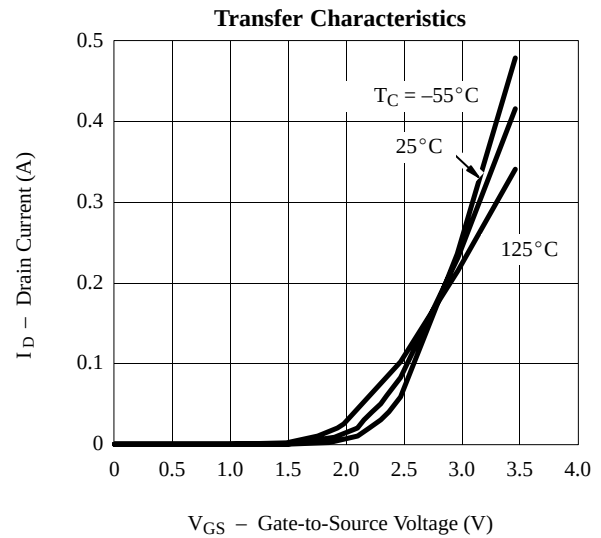
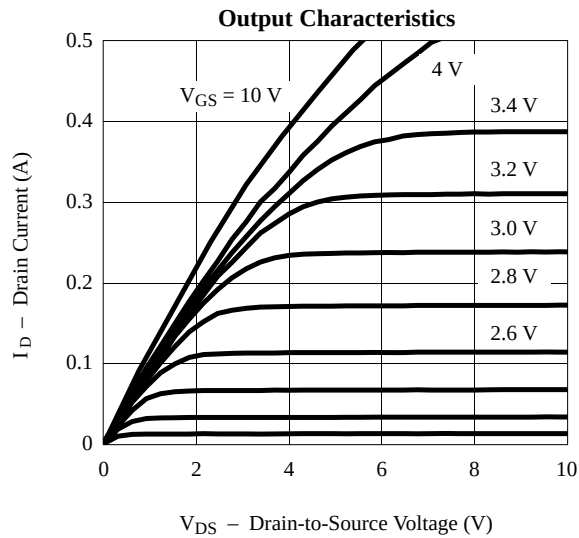
Specifications^a

Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ ^b	Max	
Static						
Drain-SourceBreakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = 100 μA	200	220		V
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 0.25 mA	0.8	1.6	3.0	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 20 V			± 100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 160 V, V _{GS} = 0 V			1	μA
		T _J = −55°C			10	
On-State Drain Current ^c	I _{D(on)}	V _{DS} = 10 V, V _{GS} = 10 V	0.3			mA
Drain-Source On-Resistance ^c	r _{DS(on)}	V _{GS} = 10 V, I _D = 0.1 A		9.5	11	Ω
		V _{GS} = 4.5 V, I _D = 0.05 mA		10	15	
Forward Transconductance ^c	g _{fs}	V _{DS} = 10 V, I _D = 0.1 A		300		mS
Diode Forward Voltage	V _{SD}	I _S = 0.085 A, V _{GS} = 0 V		0.8		V
Dynamic						
Total Gate Charge	Q _g	V _{DS} = 100 V, V _{GS} = 10 V, I _D ≈ 0.1 A		1750		pC
Gate-Source Charge	Q _{gs}			275		
Gate-Drain Charge	Q _{gd}			300		
Input Capacitance	C _{iss}	V _{DS} = 25 V, V _{GS} = 0 V, f = 1 MHz		35		pF
Output Capacitance	C _{oss}			6		
Reverse Transfer Capacitance	C _{rss}			2		
Switching ^d						
Turn-On Time	t _{d(on)}	V _{DD} = 60 V, R _L = 600 Ω I _D ≅ 0.1 A, V _{GEN} = 10 V R _G = 6 Ω		4		ns
	t _r			16		
Turn-Off Time	t _{d(off)}			16		
	t _f			45		

Notes

- $T_A = 25^\circ\text{C}$ unless otherwise noted.
- For DESIGN AID ONLY, not subject to production testing.
- Pulse test: $PW \leq 300\text{ }\mu\text{s}$ duty cycle $\leq 2\%$.
- Switching time is essentially independent of operating temperature.

Typical Characteristics (25°C Unless Otherwise Noted)



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