

N-Channel ENHANCEMENT MODE POWER MOSFET

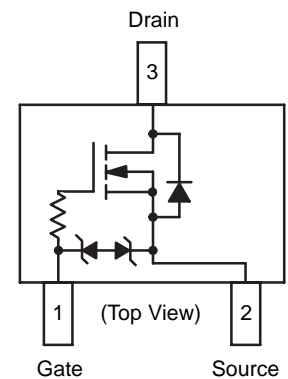
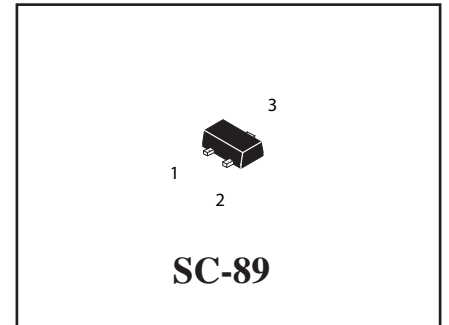
(Pb) Lead(Pb)-Free

FEATURES:

- * Low Gate Charge for Fast Switching
- * ESD Protected Gate

APPLICATIONS:

- * Power Management Load Switch
- * Portable Applications such as Cell Phones, Media Players, Digital Cameras, PDA's, Video Games, Hand Held Computers, etc.



Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise specified)

Characteristic	Symbol	Values	Unit
Drain-Source Voltage	V_{DSS}	30	V
Gate-Source Voltage	V_{GSS}	± 10	V
Drain Current	I_D	154	mA
Pulsed Drain Current $tp \leq 10\mu\text{s}$	I_{DM}	618	mA
Continuous Source Current (Body Diode)	I_{SD}	154	mA
Total Power Dissipation	P_D^1	300	mW
Junction temperature Range	T_j	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55 to +150	$^\circ\text{C}$

Note 1. Surface-mounted on FR4 board using 1 in sq pad size (Cu area = 1.127 in sq [1 oz] including traces).

Device Marking

WTX7002 = T6

Electrical Characteristics (T_A=25°C unless otherwise specified, per element)

Characteristic	Symbol	Min	Typ	Max	Unit
----------------	--------	-----	-----	-----	------

OFF CHARACTERISTICS(Note2)

Drain-Source Breakdown Voltage V _{GS} =0V, I _D =100μA	V _{(BR)DSS}	30	-	-	V
Zero Gate Voltage Drain Current V _{DS} =30V, V _{GS} =0V	I _{DSS}	-	-	1.0	μA
Gate-source Leakage V _{GS} =±10V, V _{DS} =0V	I _{GSS}	-	-	±25	μA

ON CHARACTERISTICS(Note2)

Gate Threshold Voltage V _{DS} =V _{GS} , I _D =100μA	V _{GS(th)}	0.5	1.0	1.5	V
Static Drain-Source On-Resistance V _{GS} =4.5V, I _D =154mA V _{GS} =2.5V, I _D =154mA	R _{DS(ON)}	-	1.4 2.3	7.0 7.5	Ω
Forward transfer admittance V _{DS} =3V, I _D =154mA	g _{fs}	-	80	-	mS

DYNAMIC CHARACTERISTICS

Input Capacitance V _{DS} =5V, V _{GS} =0V, f=1.0MHz	C _{iss}	-	11.5	-	pF
Output Capacitance V _{DS} =5V, V _{GS} =0V, f=1.0MHz	C _{oss}	-	10	-	
Reverse Transfer Capacitance V _{DS} =5V, V _{GS} =0V, f=1.0MHz	C _{rss}	-	3.5	-	

SWITCHING CHARACTERISTICS

Turn-On Delay Time V _{DS} =5.0V, V _{GS} =4.5V, I _D =75mA, R _G =10Ω	t _{d(ON)} *	-	13	-	nS
Rise Time V _{DS} =5.0V, V _{GS} =4.5V, I _D =75mA, R _G =10Ω	t _r	-	15	-	
Turn-Off Delay Time V _{DS} =5.0V, V _{GS} =4.5V, I _D =75mA, R _G =10Ω	t _{d(OFF)} *	-	98	-	
Fall Time V _{DS} =5.0V, V _{GS} =4.5V, I _D =75mA, R _G =10Ω	t _f	-	60	-	

Drain-Source Diode Characteristics

Input Capacitance V _{GS} =0V, I _S =0.154mA	V _{SD}	-	0.77	0.9	V
---	-----------------	---	------	-----	---

*Pulse Test : pulse width ≤ 300μs, Duty cycle ≤ 2%.

Characteristics Curve

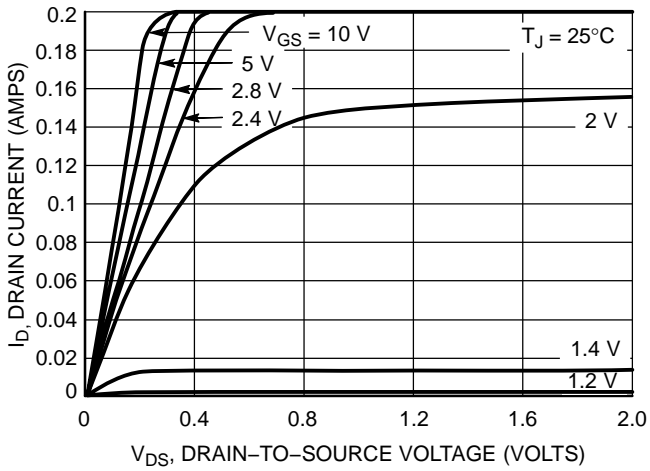


Figure 1. On-Region Characteristics

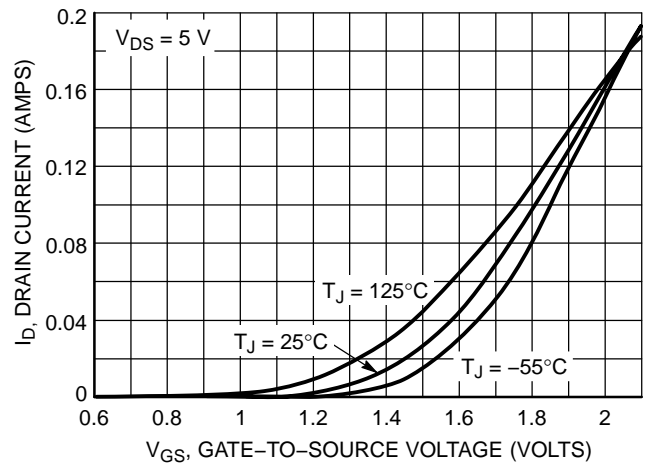


Figure 2. Transfer Characteristics

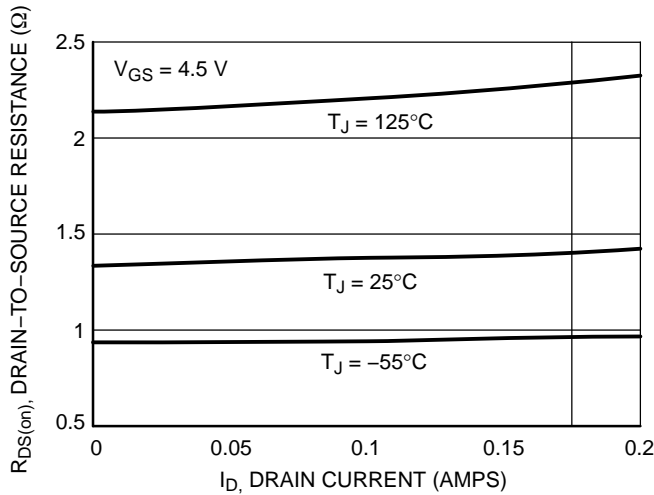


Figure 3. On-Resistance vs. Drain Current and Temperature

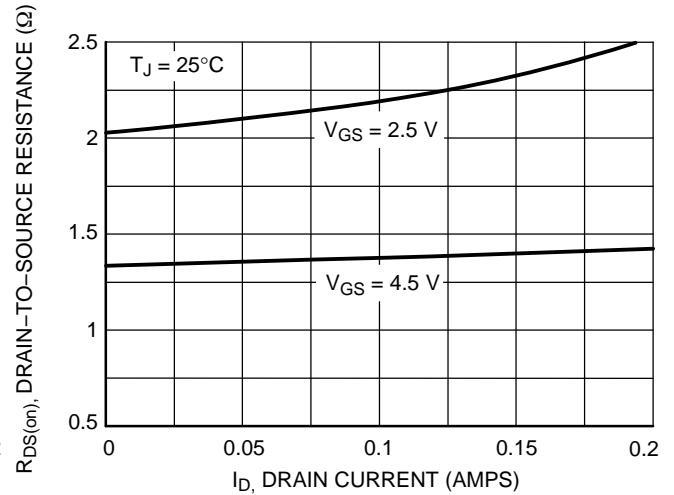


Figure 4. On-Resistance vs. Drain Current and Gate Voltage

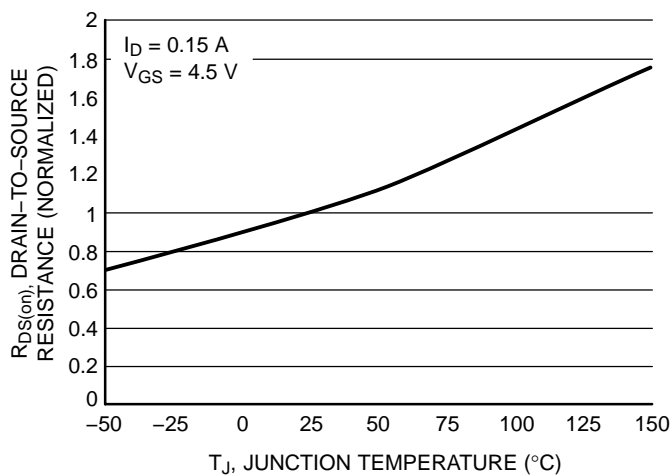


Figure 5. On-Resistance Variation with Temperature

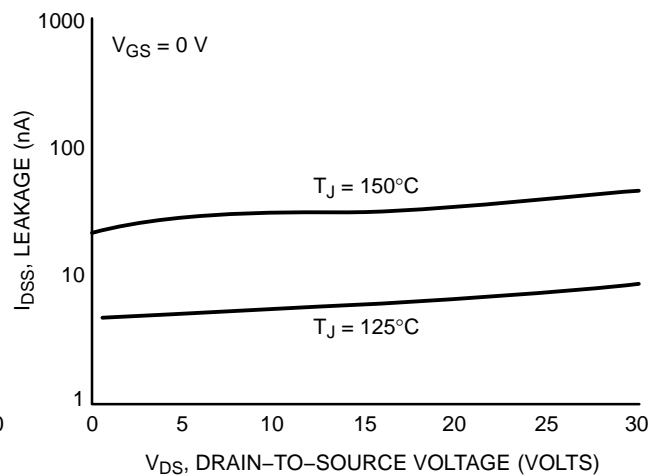


Figure 6. Drain-to-Source Leakage Current vs. Voltage

Characteristics Curve

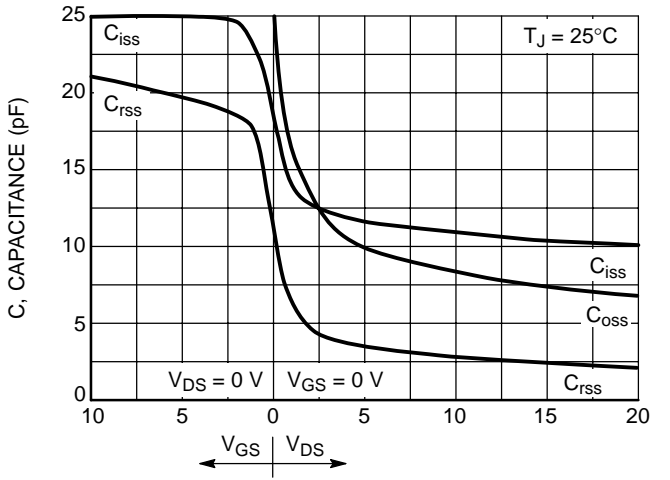


Figure 7. Capacitance Variation

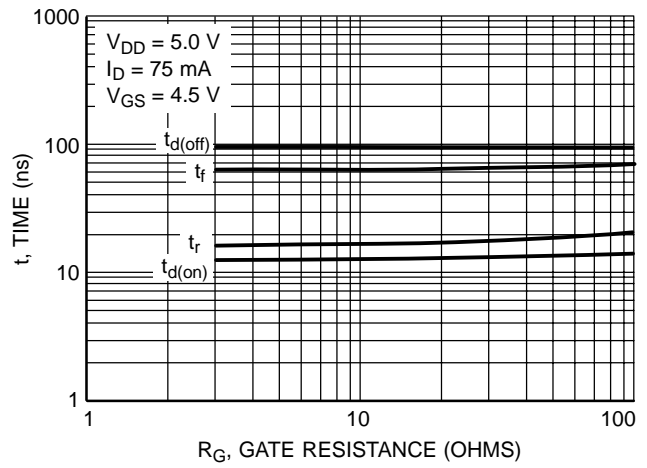


Figure 8. Resistive Switching Time Variation vs. Gate Resistance

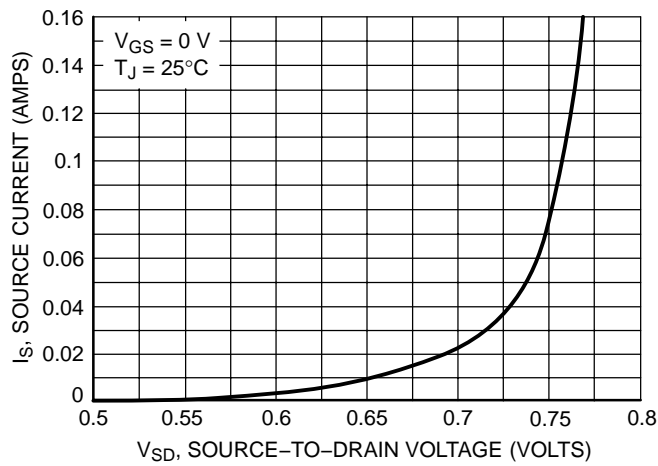


Figure 9. Diode Forward Voltage vs. Current

SC-89 Outline Demensions

Unit:mm

