



New Product

Si1022R
Vishay Siliconix

N-Channel 60-V (D-S) MOSFET

TrenchFETSM MOSFET



ESD Protected
2000 V

PRODUCT SUMMARY			
$V_{(BR)DSS(min)}$ (V)	$r_{DS(on)}$ (Ω)	$V_{GS(th)}$ (V)	I_D (mA)
60	1.25 @ $V_{GS} = 10$ V	1 to 2.5	330

FEATURES

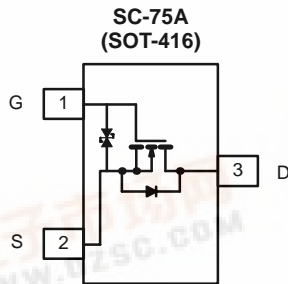
- Low On-Resistance: 1.25 Ω
- Low Threshold: 2.5 V
- Low Input Capacitance: 30 pF
- Fast Switching Speed: 25 ns
- Low Input and Output Leakage
- Miniature Package

BENEFITS

- Low Offset Voltage
- Low-Voltage Operation
- High-Speed Circuits
- Low Error Voltage
- Small Board Area

APPLICATIONS

- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories, Transistors, etc.
- Battery Operated Systems
- Solid-State Relays



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)			
Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ^a	I_D	$T_A = 25^\circ\text{C}$	330
		$T_A = 85^\circ\text{C}$	240
Pulsed Drain Current ^a	I_{DM}	650	mA
Power Dissipation ^a	P_D	$T_A = 25^\circ\text{C}$	
		$T_A = 85^\circ\text{C}$	130
Thermal Resistance, Maximum Junction-to-Ambient ^a	R_{thJA}	500	$^\circ\text{C}/\text{W}$
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150	$^\circ\text{C}$

Notes:
a. Surface Mounted on FR4 Board, Power Applied for $t \leq 10$ sec.

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SPECIFICATIONS (T _J = 25 °C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ	Max	
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = 10 μA	60			V
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 0.25 mA	1		2.5	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±10 V			±150	nA
		T _J = 85 °C			±500	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 0 V, V _{GS} = ±5 V			±20	μA
		V _{DS} = 50 V, V _{GS} = 0 V			10	
On-State Drain Current ^a	I _{D(on)}	V _{DS} = 10 V, V _{GS} = 4.5 V	500			mA
		V _{DS} = 7.5 V, V _{GS} = 10 V	800			
Drain-Source On-Resistance ^a	r _{DS(on)}	V _{GS} = 4.5 V, I _D = 200 mA			3.0	Ω
		T _J = 125 °C			5.0	
		V _{GS} = 10 V, I _D = 500 mA			1.25	
		T _J = 125 °C			2.25	
Forward Transconductance ^a	g _{fs}	V _{DS} = 10 V, I _D = 200 mA	100			mS
Diode Forward Voltage ^a	V _{SD}	V _{GS} = 0 V, I _S = 200 mA			1.30	V
Dynamic^b						
Input Capacitance	C _{iss}	V _{DS} = 25 V, V _{GS} = 0 V f = 1 MHz		30		pF
Output Capacitance	C _{oss}			6		nC
Reverse Transfer Capacitance	C _{rss}			2.5		
Gate Charge	Q _g	V _{DS} = 10 V, I _D = 250 mA V _{GS} = 4.5 V			0.6	
Switching^{b, c}						
Turn-On Time	t _(on)	V _{DD} = 30 V, R _L = 150 Ω I _D = 200 mA, V _{GEN} = 10 V R _G = 10 Ω			25	ns
Turn-Off Time	t _(off)				35	

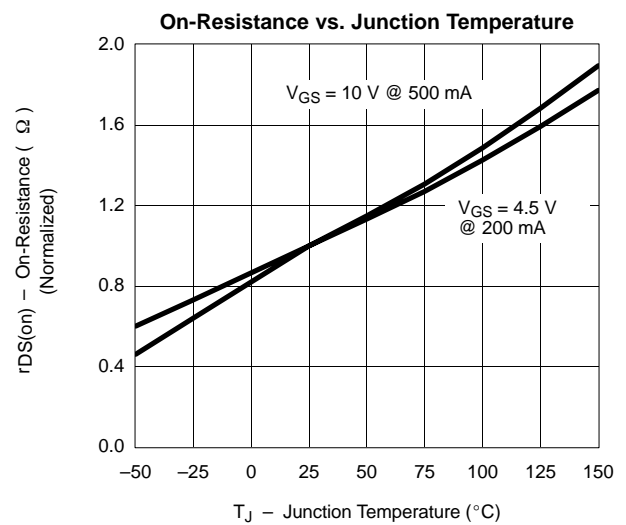
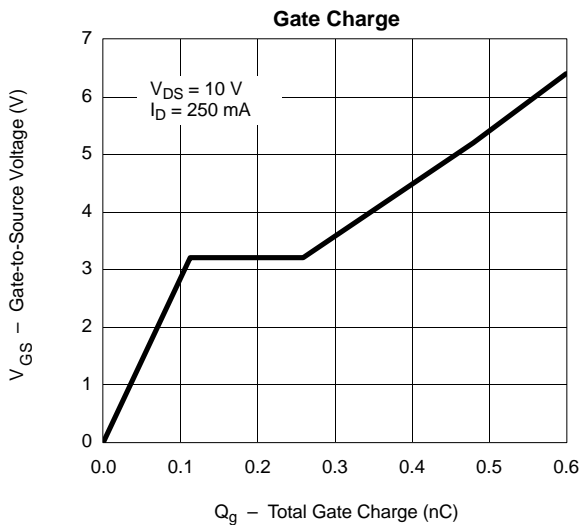
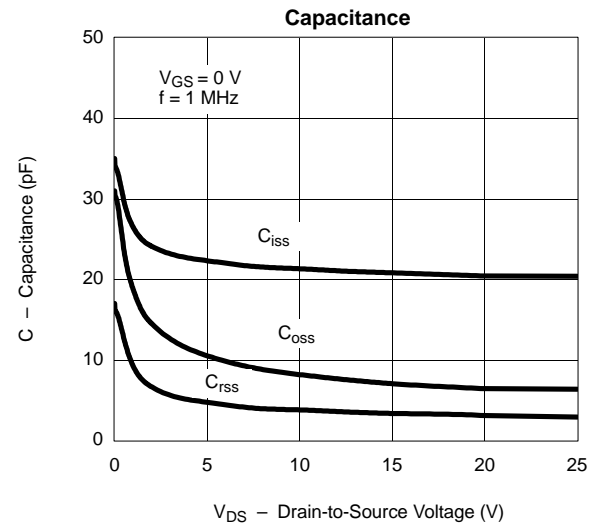
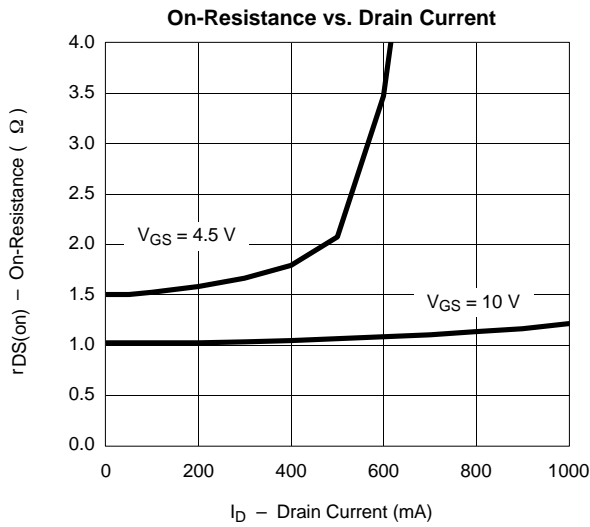
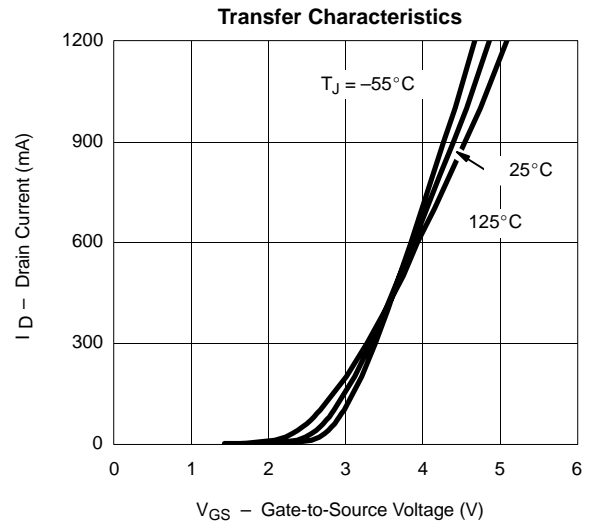
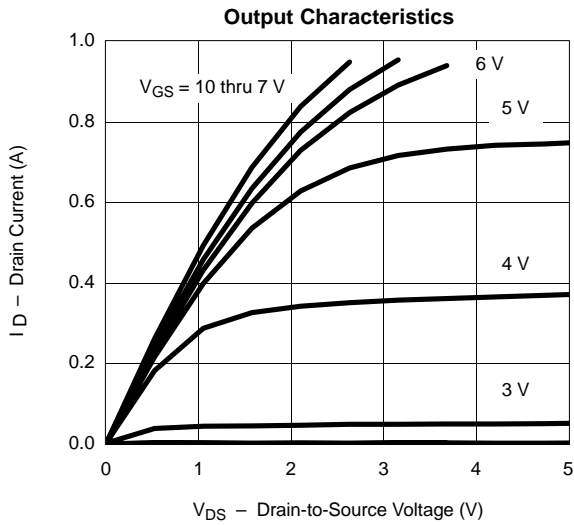
Notes

- a. Pulse test: PW ≤ 300 μs duty cycle ≤ 2%.
- b. For DESIGN AID ONLY, not subject to production testing.
- c. Switching time is essentially independent of operating temperature.

TNJO60



TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)





TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

