



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)
120	6 @ $V_{GS} = 10$ V	0.8 to 2	0.23

FEATURES

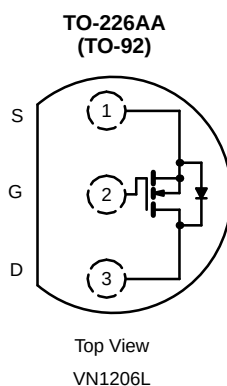
- Low On-Resistance: 3.8 Ω
- Low Threshold: 1.4 V
- Low Input Capacitance: 35 pF
- Fast Switching Speed: 10 ns
- Low Input and Output Leakage

BENEFITS

- Low Offset Voltage
- Low-Voltage Operation
- Easily Driven Without Buffer
- High-Speed Circuits
- Low Error Voltage

APPLICATIONS

- Direct Logic-Level Interface: TTL/CMOS
- 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	Limits	Unit
Drain-Source Voltage		V_{DS}	120	V
Gate-Source Voltage		V_{GS}	± 30	
Continuous Drain Current ($T_J = 150^\circ\text{C}$)	$T_A = 25^\circ\text{C}$	I_D	0.23	A
	$T_A = 100^\circ\text{C}$		0.15	
Pulsed Drain Current ^a		I_{DM}	2	
Power Dissipation	$T_A = 25^\circ\text{C}$	P_D	0.8	W
	$T_A = 100^\circ\text{C}$		0.32	
Maximum Junction-to-Ambient		R_{thJA}	156	$^\circ\text{C/W}$
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.

SPECIFICATIONS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ ^a	Max	
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = 100 μA	120	145		V
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA		1.4		
		V _{DS} = V _{GS} , I _D = 1 mA	0.8	1.5	2	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 15 V T _J = 125°C			± 100 ± 500	nA
		V _{DS} = 0 V, V _{GS} = ± 20 V				
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 96 V, V _{GS} = 0 V T _J = 125°C				μA
		V _{DS} = 120 V, V _{GS} = 0 V			10	
		T _J = 125°C			500	
On-State Drain Current ^b	I _{D(on)}	V _{DS} = 10 V, V _{GS} = 4.5 V		0.6		A
		V _{DS} = 10 V, V _{GS} = 10 V	1	1.6		
Drain-Source On-Resistance ^b	r _{DS(on)}	V _{GS} = 2.5 V, I _D = 0.1 A		6	10	Ω
		V _{GS} = 3.5 V, I _D = 0.1 A		4.5		
		V _{GS} = 10 V, I _D = 0.3 A		3.3		
		V _{GS} = 4.5 V, I _D = 0.2 A T _J = 125°C		3.8 7.6		
		V _{GS} = 10 V, I _D = 0.5 A		3.3	6	
		T _J = 125°C		7	14.8	
Forward Transconductance ^b	g _{fs}	V _{DS} = 10 V, I _D = 0.2 A		400		mS
		V _{DS} = 10 V, I _D = 0.5 A	300	425		
Common Source Output Conductance ^b	g _{os}	V _{DS} = 7.5 V, I _D = 0.1 A		0.4		
Dynamic						
Input Capacitance	C _{iss}	V _{DS} = 25 V, V _{GS} = 0 V f = 1 MHz		35	125	pF
Output Capacitance	C _{oss}			15	50	
Reverse Transfer Capacitance	C _{rss}			2	20	
Switching ^c						
Turn-On Time	t _{ON}	V _{DD} = 60 V, R _L = 150 Ω I _D ≅ 0.4 A, V _{GEN} = 10 V R _G = 25 Ω		6		ns
	t _{d(on)}			3	8	
	t _r			3	8	
Turn-Off Time	t _{OFF}			10		
	t _{d(off)}			7	18	
	t _f			2.5	12	

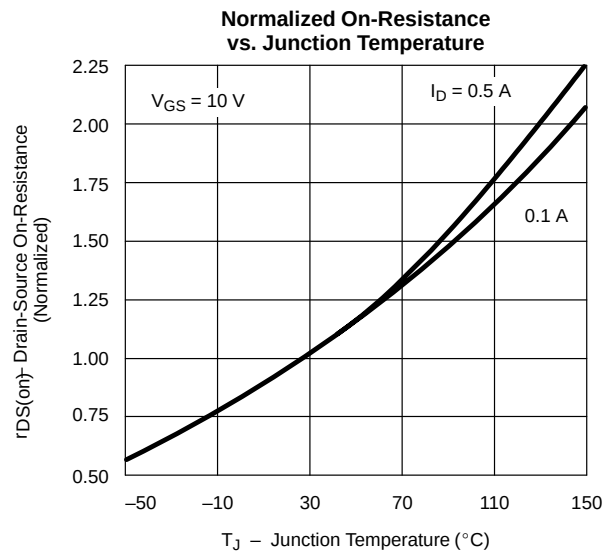
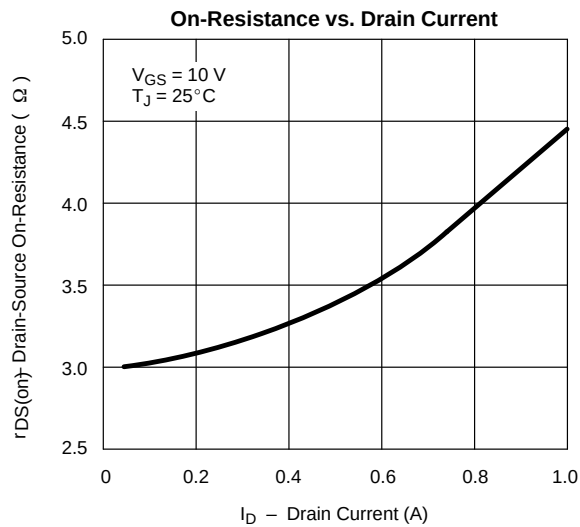
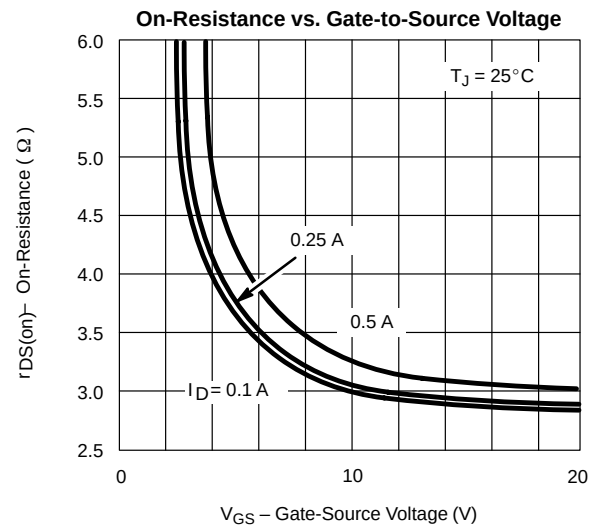
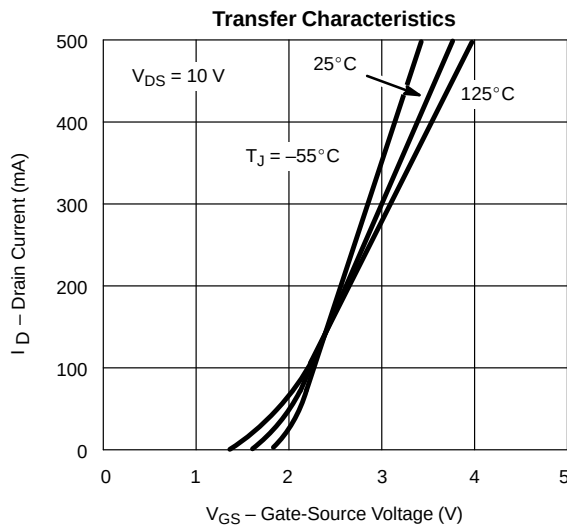
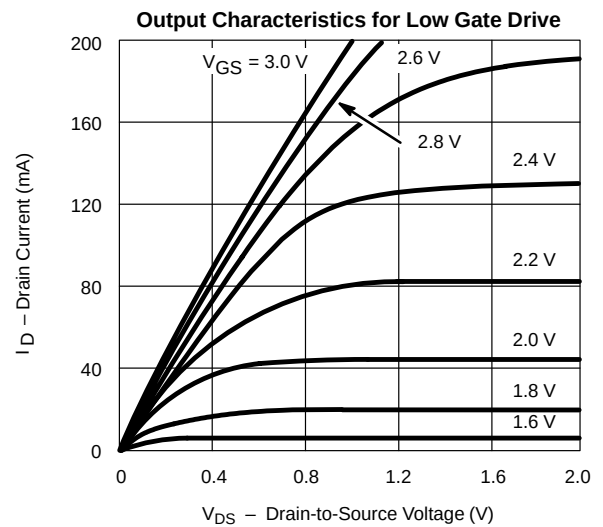
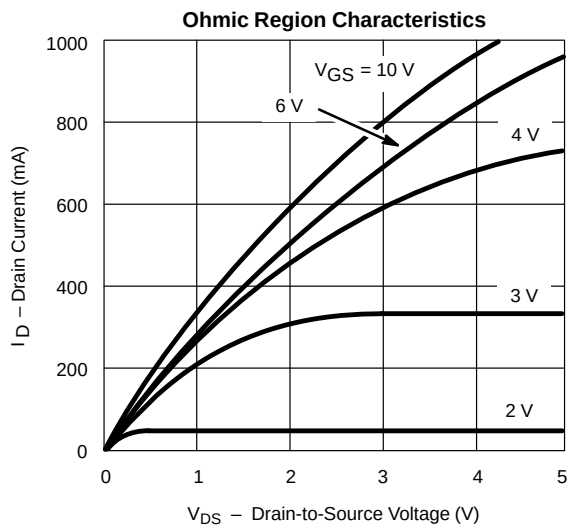
Notes

- a. For DESIGN AID ONLY, not subject to production testing..
b. Pulse test: $PW \leq 300\text{ }\mu\text{s}$ duty cycle $\leq 2\%$.
c. Switching time is essentially independent of operating temperature.

VNDQ12



TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



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