

ND2406L/2410L, BSS129

N-Channel Depletion-Mode MOSFET Transistors

Product Summary

Part Number	$V_{(BR)DSV}$ Min (V)	$r_{DS(on)}$ Max (Ω)	$V_{GS(off)}$ (V)	I_D (A)
ND2406L	240	6	-1.5 to -4.5	0.23
ND2410L		10	-0.5 to -2.5	0.18
BSS129	230	20	-0.7 (min)	0.15

Features

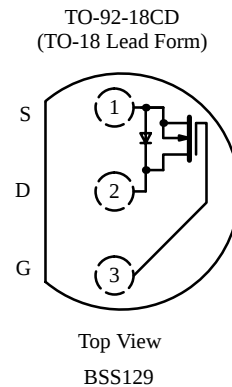
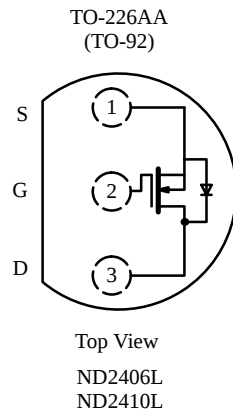
- High Breakdown Voltage: 260 V
- Normally “On” Low r_{DS} Switch: 3.5 Ω
- Low Input and Output Leakage
- Low-Power Drive Requirement
- Low Input Capacitance

Benefits

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

Applications

- Normally “On” Switching Circuits
- Current Sources/Limiters
- Power Supply, Converter Circuits
- Solid-State Relays
- Telecom Switches



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

Parameter	Symbol	ND2406L	ND2410L	BSS129	Unit
Drain-Source Voltage	V_{DS}	240	240	230	V
Gate-Source Voltage	V_{GS}	± 30	± 30	± 20	
Continuous Drain Current ($T_J = 150^\circ\text{C}$)	I_D	0.23	0.18	0.15	A
		0.14	0.12		
Pulsed Drain Current ^a	I_{DM}	0.9	0.9	0.6	
Power Dissipation	P_D	0.8	0.8	1.0	W
		0.32	0.32	0.4	
Maximum Junction-to-Ambient	R_{thJA}	156	156	125	$^\circ\text{C/W}$
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 #70198. Applications information may also be obtained via FaxBack, request document #70612.

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Specifications^a

Parameter	Symbol	Test Conditions	Typ ^b	Limits						Unit
				ND2406L		ND2410L		BSS129		
				Min	Max	Min	Max	Min	Max	
Static										
Drain-Source Breakdown Voltage	V _{(BR)DSV}	V _{GS} = -9 V, I _D = 10 μA	260	240						V
		V _{GS} = -5 V, I _D = 10 μA	260			240				
		V _{GS} = -3 V, I _D = 250 μA	260					230		
Gate-Source Cutoff Voltage	V _{GS(off)}	V _{DS} = 5 V, I _D = 10 μA		-1.5	-4.5	-0.5	-2.5			
		V _{DS} = 3 V, I _D = 1 mA						-0.7		
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 20 V			± 10		± 10		± 100	nA
		T _J = 125°C			± 50		± 50			
Drain Cutoff Current	I _{D(off)}	V _{DS} = 180 V, V _{GS} = -9 V			1					μA
		T _J = 125°C			200					
		V _{DS} = 180 V, V _{GS} = -5 V					1			
		T _J = 125°C					200			
		V _{DS} = 230 V, V _{GS} = -3 V							0.1	
		T _J = 125°C							200	
Drain-Saturation Current ^c	I _{DSS}	V _{DS} = 10 V, V _{GS} = 0 V	350	40		40			mA	
Drain-Source On-Resistance ^c	r _{DS(on)}	V _{GS} = 2 V, I _D = 30 mA	3.3							Ω
		V _{GS} = 0 V, I _D = 30 mA	4.5		6		10			
		T _J = 125°C	7.2		15		25			
		V _{GS} = 0 V, I _D = 14 mA	4						20	
Forward Transconductance ^c	g _{fs}	V _{DS} = 25 V, I _D = 250 mA	375					140		mS
			110							
Common Source Output Conductance ^c	g _{os}	V _{DS} = 10 V, I _D = 30 A	70							μS
Dynamic										
Input Capacitance	C _{iss}	V _{DS} = 25 V, V _{GS} = -5 V f = 1 MHz	70		120		120			pF
Output Capacitance	C _{oss}		20		30		30			
Reverse Transfer Capacitance	C _{rss}		10		15		15			
Switching ^d										
Turn-On Time	t _{d(on)}	V _{DD} = 25 V, R _L = 830 Ω I _D ≅ 30 mA, V _{GEN} = -5 V R _G = 25 Ω	15							ns
	t _r		75							
Turn-Off Time	t _{d(off)}		40							
	t _f		100							

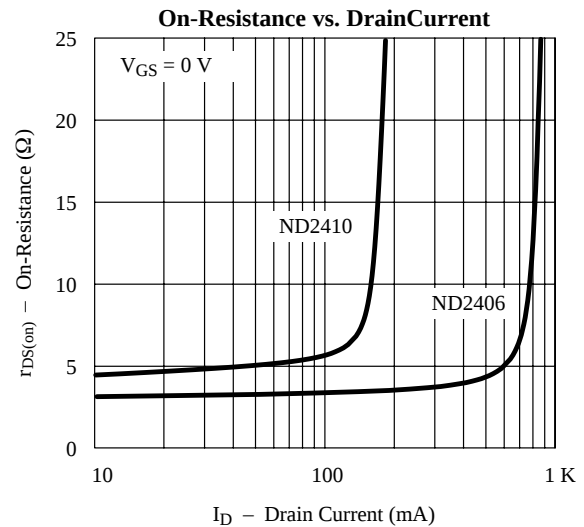
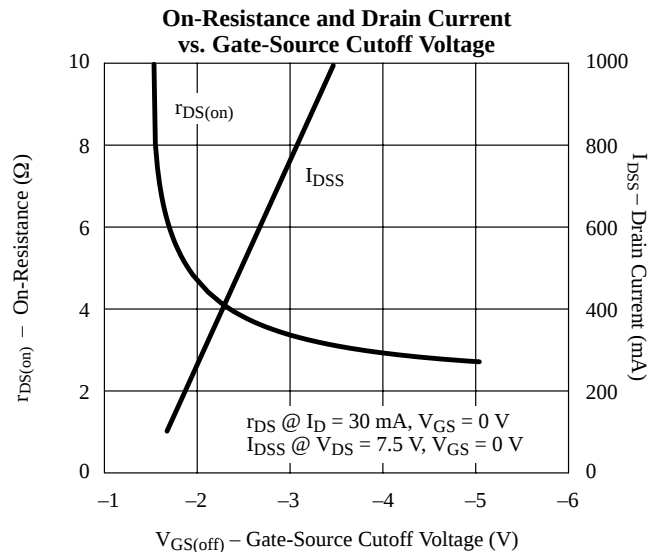
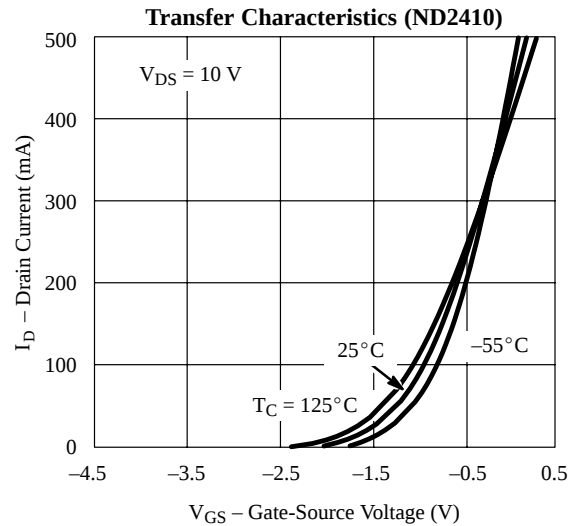
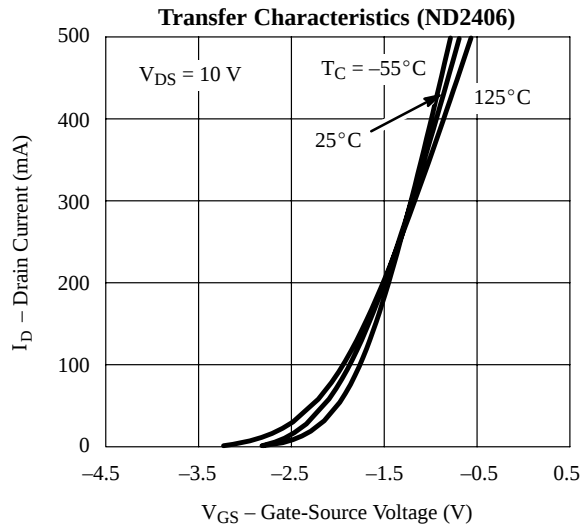
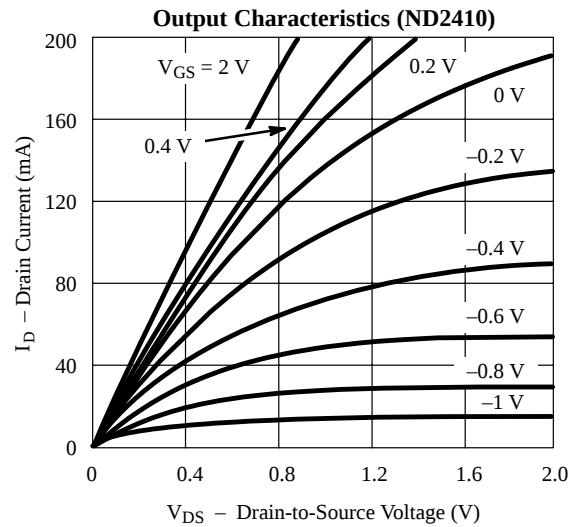
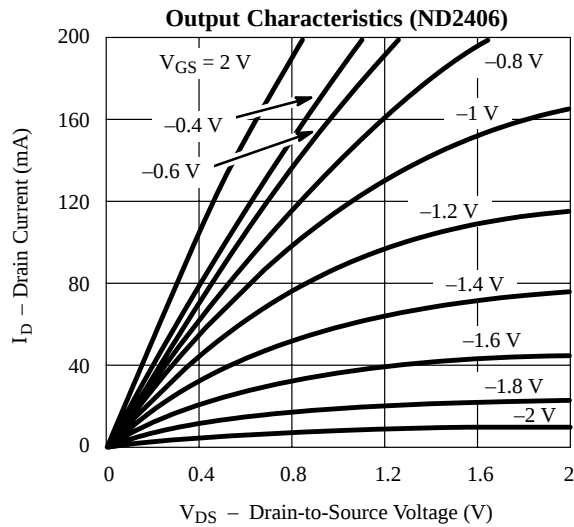
Notes

- $T_A = 25^\circ\text{C}$ 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.

VDDV24

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Typical Characteristics (25°C Unless Otherwise Noted)



ND2406L/2410L, BSS129

Typical Characteristics (25°C Unless Otherwise Noted) (Cont'd)

