

P-Channel Enhancement-Mode MOSFET Transistor

Product Summary

$V_{(BR)DSS}$ Min (V)	$r_{DS(on)}$ Max (Ω)	$V_{GS(th)}$ (V)	I_D (A)
-240	10 @ $V_{GS} = -4.5$ V	-0.8 to -2.5	-0.18

Features

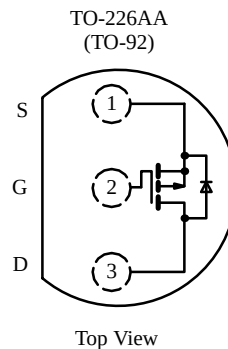
- High-Side Switching
- Secondary Breakdown Free: -255 V
- Low On-Resistance: 8 Ω
- Low-Power/Voltage Driven
- Excellent Thermal Stability

Benefits

- Ease in Driving Switches
- Full-Voltage Operation
- Low Offset Voltage
- Easily Driven Without Buffer
- No High-Temperature “Run-Away”

Applications

- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories, Transistors, etc.
- Power Supply, Converters
- Motor Control
- Switches



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

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	V_{DS}	-240	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ($T_J = 150^\circ\text{C}$)	I_D	$T_A = 25^\circ\text{C}$ -0.18	A
		$T_A = 100^\circ\text{C}$ -0.11	
Pulsed Drain Current ^a	I_{DM}	-0.72	
Power Dissipation	P_D	$T_A = 25^\circ\text{C}$ 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.

Updates to this data sheet may be obtained via facsimile by calling Siliconix FaxBack, 1-408-970-5600. Please request FaxBack document #70211.

Specifications^a

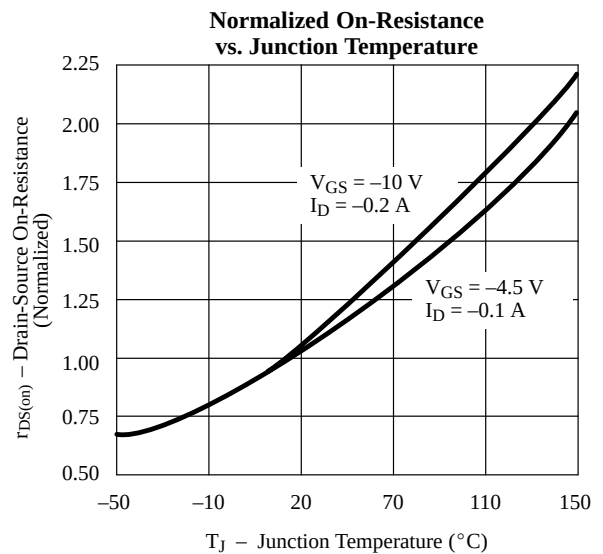
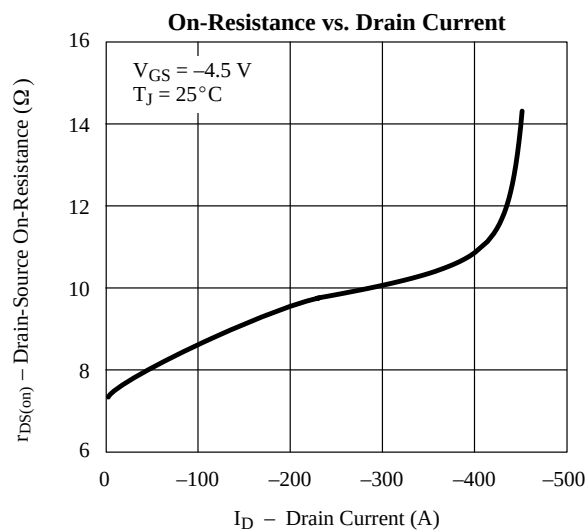
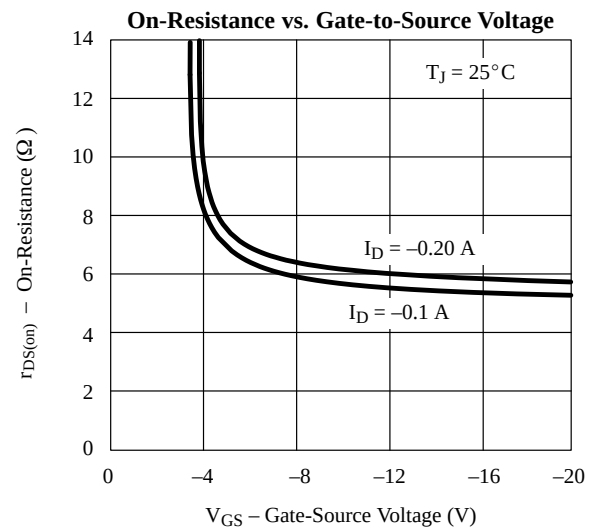
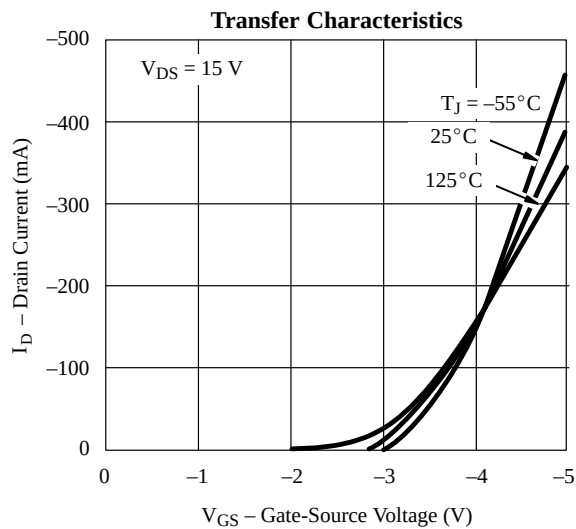
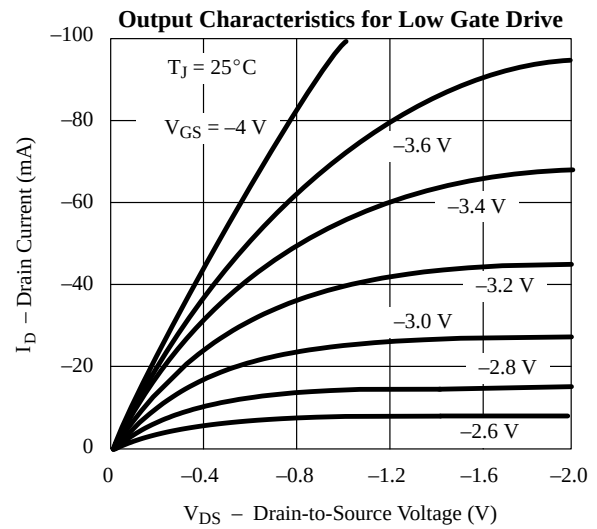
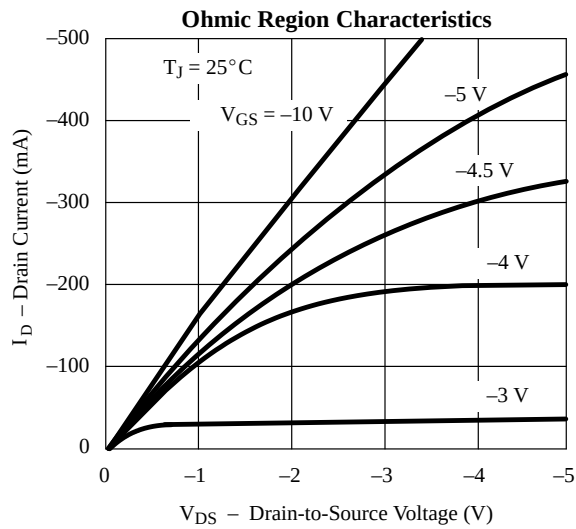
Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ ^b	Max	
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = −5 μA	−240	−255		V
		V _{GS} = 0 V, I _D = −10 μA		−255		
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = −1 mA		−2.1		
		V _{DS} = V _{GS} , I _D = −2.5 mA	−0.8	−2.2	−2.5	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±10	nA
		T _J = 125°C			±50	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = −180 V, V _{GS} = 0 V			−1	μA
		T _J = 125°C			−100	
On-State Drain Current ^c	I _{D(on)}	V _{DS} = −10 V, V _{GS} = −4.5 V	−150	−300		mA
Drain-Source On-Resistance ^c	r _{DS(on)}	V _{GS} = −10 V, I _D = −0.1 A		6		Ω
		V _{GS} = −4.5 V, I _D = −0.1 A		8	10	
		T _J = 125°C		14.5	20	
Forward Transconductance ^c	g _{fs}	V _{DS} = −10 V, I _D = −0.1 A	125	175		mS
Common Source Output Conductance ^c	g _{os}	V _{DS} = −10 V, I _D = −0.05 A		0.125		
Dynamic						
Input Capacitance	C _{iss}	V _{DS} = −25 V, V _{GS} = 0 V f = 1 MHz		65	95	pF
Output Capacitance	C _{oss}			25	30	
Reverse Transfer Capacitance	C _{rss}			12	15	
Switching ^d						
Turn-On Time	t _{ON}	V _{DD} = −25 V, R _L = 250 Ω I _D ≅ −0.1 A, V _{GEN} = −10 V R _G = 25 Ω		25		ns
	t _{d(on)}			7	15	
	t _r			18	30	
Turn-Off Time	t _{OFF}			90		
	t _{d(off)}			45	70	
	t _f			45	60	

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.

VPDV24

Typical Characteristics (25°C Unless Otherwise Noted)



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

