P-Channel 240-V (D-S) MOSFET

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

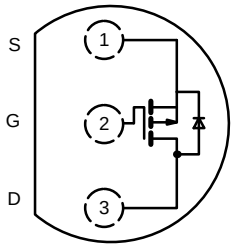
BENEFITS

- 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

TO-226AA
(TO-92)



Top View

Device Marking
Front View

“S” = Siliconix Logo
xxyy = Date Code

ABSOLUTE MAXIMUM RATINGS (T_A = 25°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°C)	T_A= 25°C	I_D	–0.18	A
	T_A= 100°C		–0.11	
Pulsed Drain Current[a]		I_{DM}	–0.72	
Power Dissipation	T_A= 25°C	P_D	0.8	W
	T_A= 100°C		0.32	
Thermal Resistance, Junction-to-Ambient		R_{thJA}	156	°C/W
Operating Junction and Storage Temperature Range		T_J, T_{stg}	–55 to 150	°C

Notes
a. Pulse width limited by maximum junction temperature.

SPECIFICATIONS (T_A = 25°C UNLESS OTHERWISE NOTED)

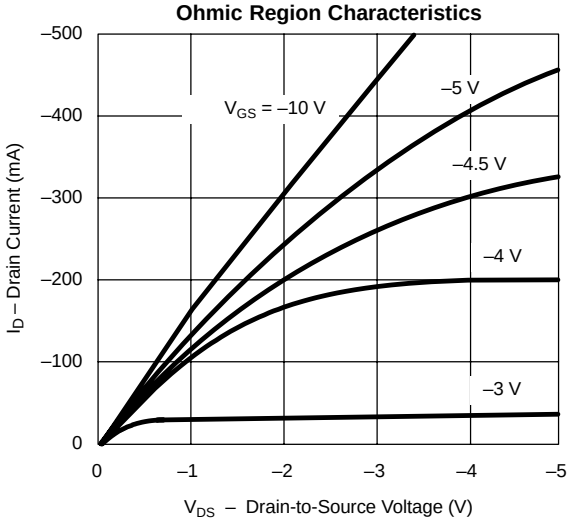
Parameter	Symbol	Test Conditions	Limits Min	Limits Typ[a]	Limits Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0 V, I_D = –5 μA	–240	–255		V
		V_{GS} = 0 V, I_D = –10 μA		–255		
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = –1 mA		–2.1		
		V_{DS} = V_{GS}, I_D = –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[b]	$I_{D(on)}$	V_{DS} = –10 V, V_{GS} = –4.5 V	–150	–300		mA
Drain-Source On-Resistance[b]	$r_{DS(on)}$	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[b]	g_{fs}	V_{DS} = –10 V, I_D = –0.1 A	125	175		mS
Common Source Output Conductance[b]	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[c]						
Turn-On Time	$t_{d(on)}$	V_{DD} = –25 V, R_L = 250 Ω I_D ≅ –0.1 A, V_{GEN} = –10 V R_G = 25 Ω		7	15	ns
	t_r			18	30	
Turn-Off Time	$t_{d(off)}$			45	70	
	t_f			45	60	

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

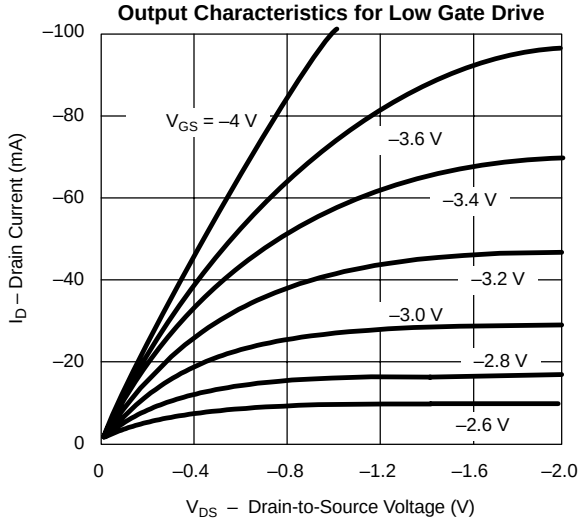
VPDV24

TYPICAL CHARACTERISTICS (T_A = 25°C UNLESS OTHERWISE NOTED)

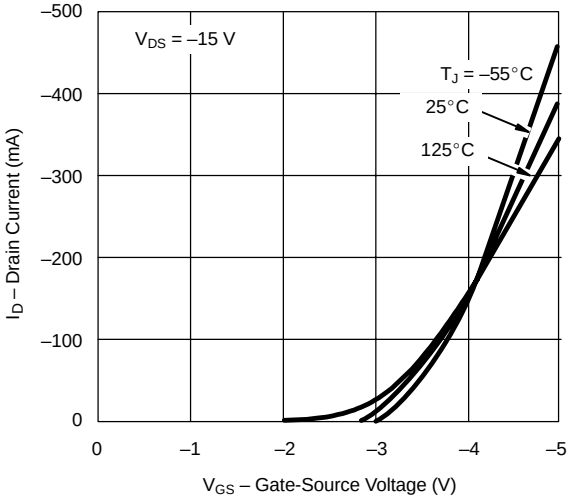
Ohmic Region Characteristics



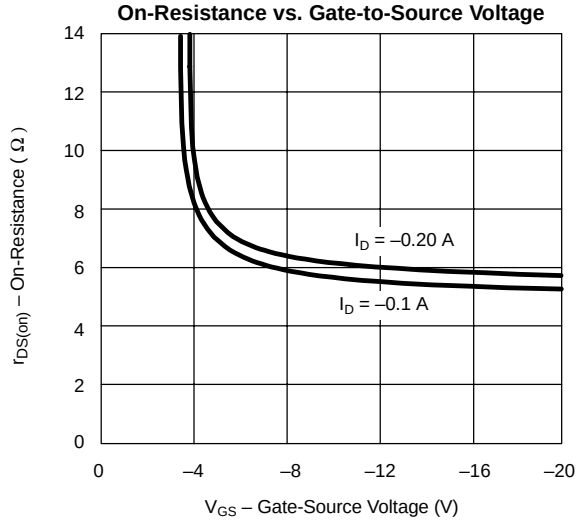
Output Characteristics for Low Gate Drive



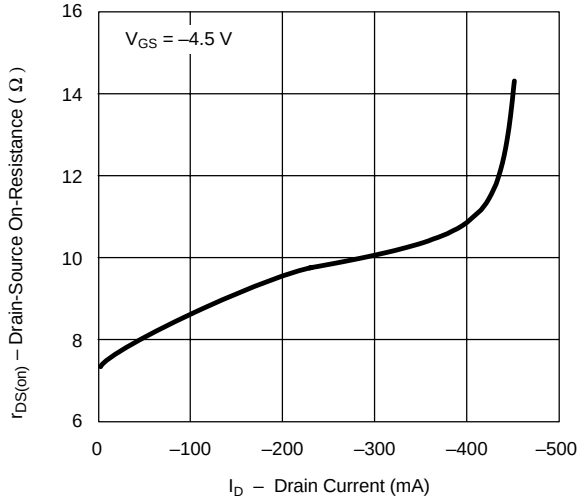
Transfer Characteristics



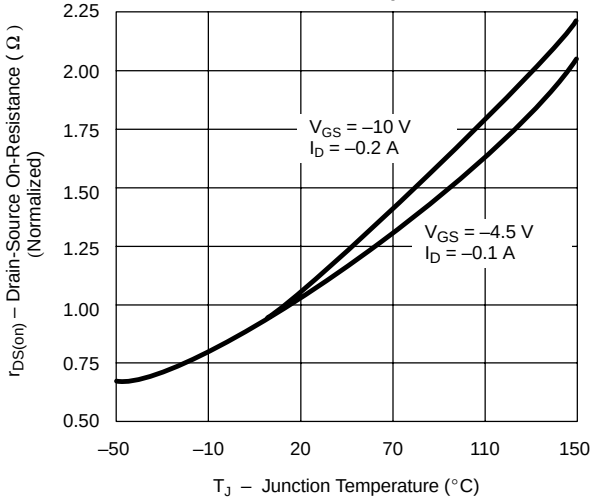
On-Resistance vs. Gate-to-Source Voltage



On-Resistance vs. Drain Current

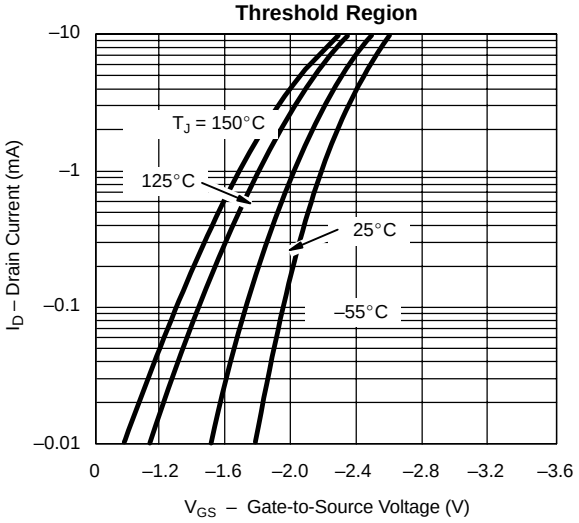


Normalized On-Resistance vs. Junction Temperature

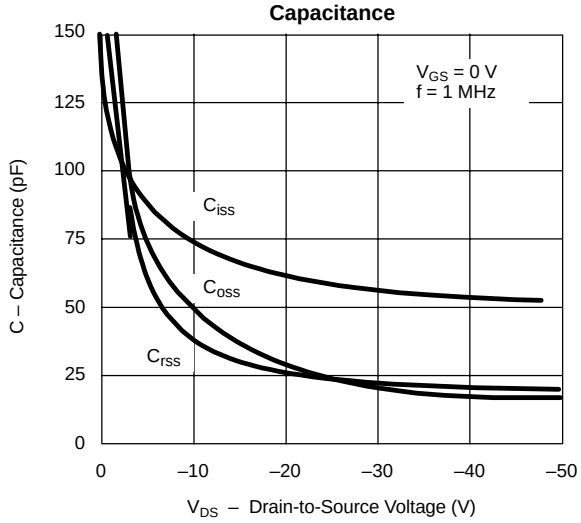


TYPICAL CHARACTERISTICS (T_A = 25°C UNLESS OTHERWISE NOTED)

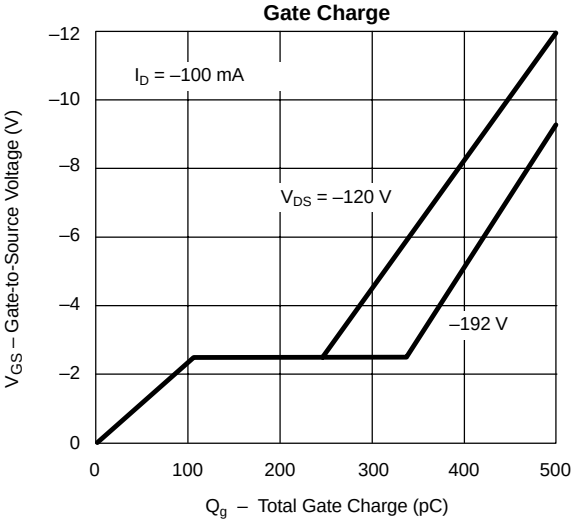
Threshold Region



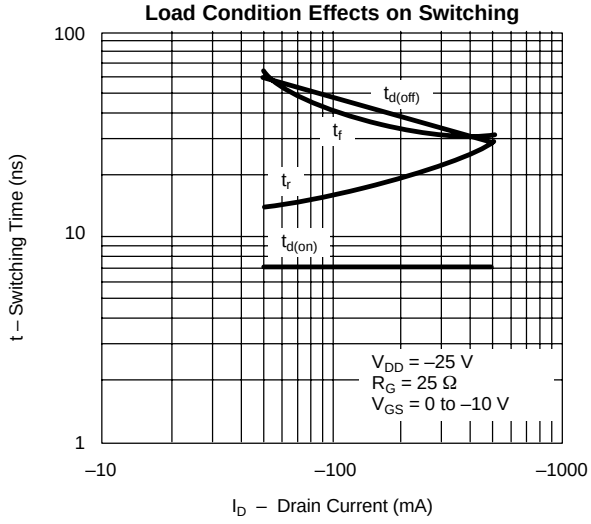
Capacitance



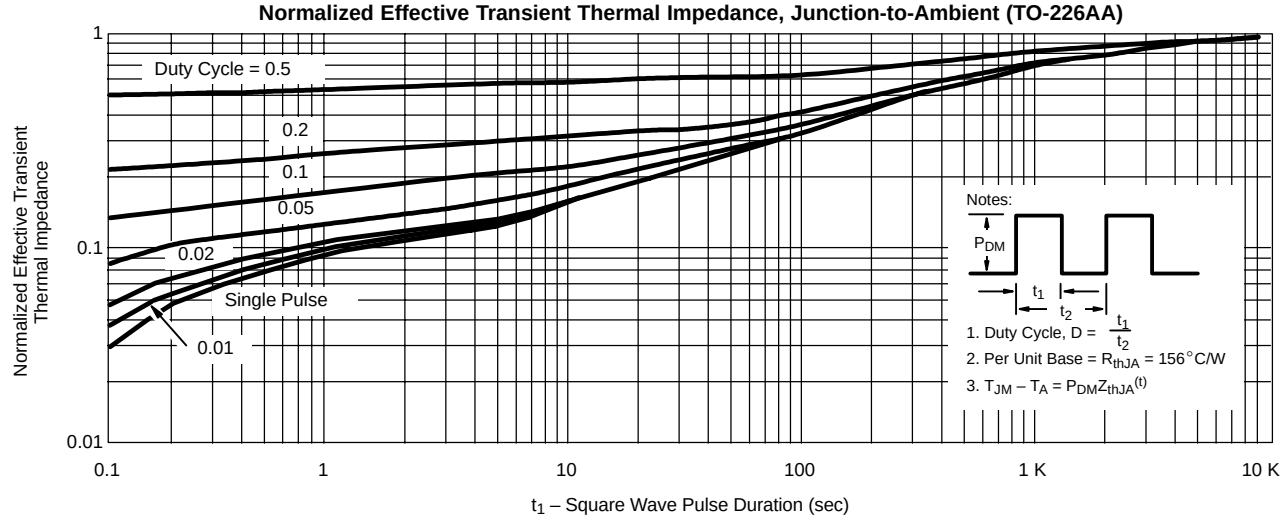
Gate Charge



Load Condition Effects on Switching



Normalized Effective Transient Thermal Impedance, Junction-to-Ambient (TO-226AA)



Disclaimer

All product specifications and data are subject to change without notice.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, “Vishay”), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay’s terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.