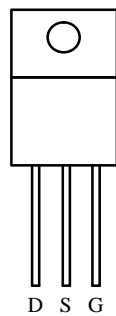


N-Channel Enhancement-Mode Transistor

Product Summary

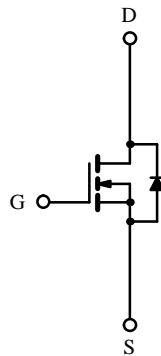
$V_{(BR)DSS}$ (V)	$r_{DS(on)}$ (Ω)	I_D (A)
500	0.40	13

**TO-254AA
Hermetic Package**



Top View

Case Isolated



N-Channel MOSFET

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

Parameter	Symbol	Limit	Unit	
Drain-Source Voltage	V_{DS}	500	V	
Gate-Source Voltage	V_{GS}	± 20		
Continuous Drain Current ($T_J = 150^\circ\text{C}$)	I_D	$T_C = 25^\circ\text{C}$	13	A
		$T_C = 100^\circ\text{C}$	8.0	
Pulsed Drain Current	I_{DM}	50		
Maximum Power Dissipation	P_D	$T_C = 25^\circ\text{C}$	150	W
		$T_C = 100^\circ\text{C}$	60	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150	$^\circ\text{C}$	
Lead Temperature ($1/16''$ from case for 10 sec.)	T_L	300		

Thermal Resistance Ratings

Parameter	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient	R_{thJA}		50	$^\circ\text{C}/\text{W}$
Maximum Junction-to-Case	R_{thJC}		0.83	
Case-to-Sink	R_{thCS}	0.2		

Subsequent updates to this data sheet may be obtained via facsimile by calling Siliconix FaxBack, 1-408-970-5600. Please request FaxBack document #1455.

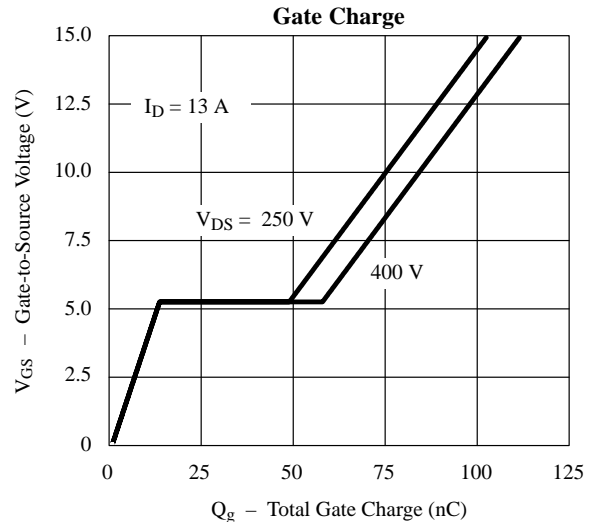
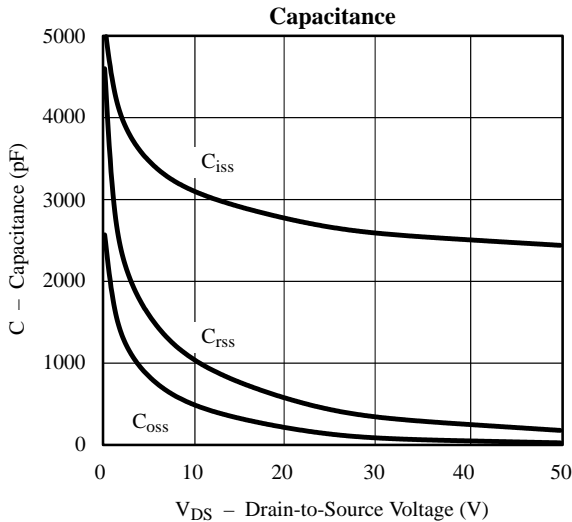
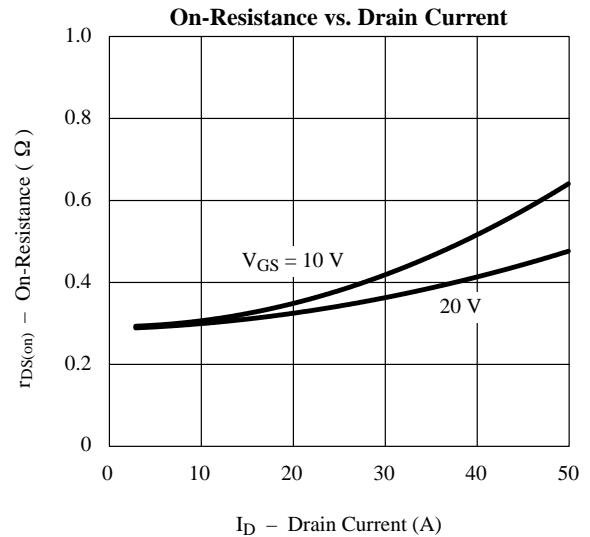
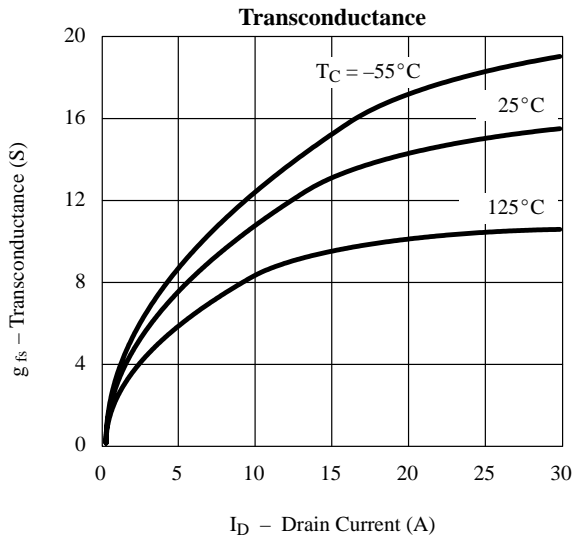
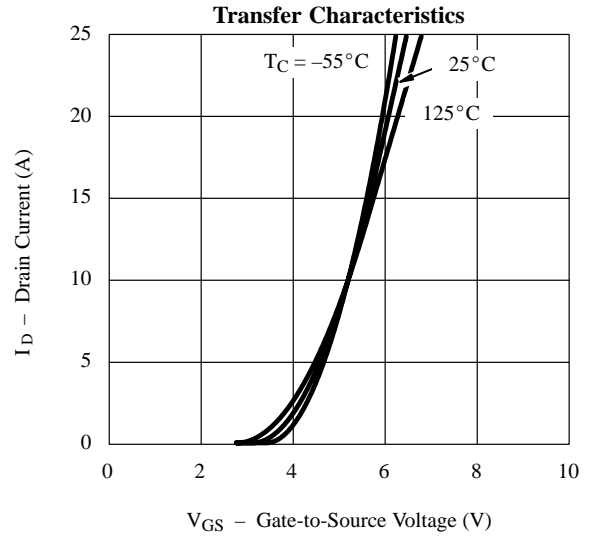
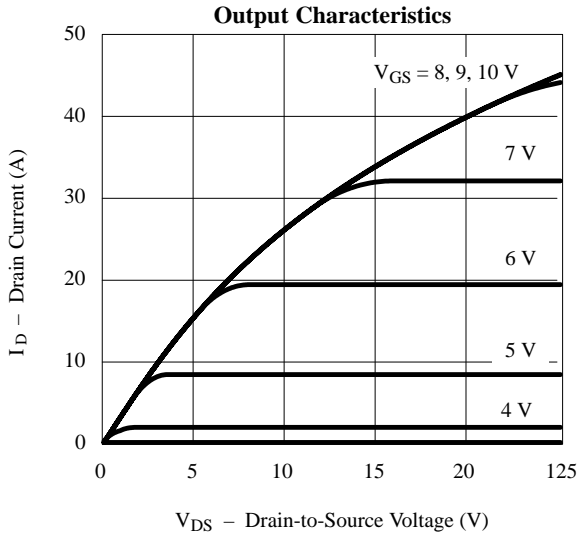
Specifications ($T_J = 25^\circ\text{C}$ Unless Otherwise Noted)

Parameter	Symbol	Test Condition	Limit			Unit
			Min	Typ ^a	Max	
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}, I_D = 250\ \mu\text{A}$	500			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\ \mu\text{A}$	2.0		4.0	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 400\text{ V}, V_{GS} = 0\text{ V}$			25	μA
		$V_{DS} = 400\text{ V}, V_{GS} = 0\text{ V}, T_J = 125^\circ\text{C}$			250	
On-State Drain Current ^b	$I_{D(on)}$	$V_{DS} = 10\text{ V}, V_{GS} = 10\text{ V}$	13.0			A
Drain-Source On-State Resistance ^b	$r_{DS(on)}$	$V_{GS} = 10\text{ V}, I_D = 8.0\text{ A}$		0.31	0.40	Ω
		$V_{GS} = 10\text{ V}, I_D = 8.0\text{ A}, T_J = 125^\circ\text{C}$		0.67	0.90	
Forward Transconductance ^b	g_{fs}	$V_{DS} = 15\text{ V}, I_D = 8.0\text{ A}$	8.0	10	24	S
Dynamic						
Input Capacitance	C_{iss}	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		2700		pF
Output Capacitance	C_{oss}			500		
Reverse Transfer Capacitance	C_{rss}			140		
Total Gate Charge ^c	Q_g	$V_{DS} = 250\text{ V}, V_{GS} = 10\text{ V}, I_D = 13\text{ A}$		75	120	nC
Gate-Source Charge ^c	Q_{gs}			12	19	
Gate-Drain Charge ^c	Q_{gd}			35	70	
Turn-On Delay Time ^c	$t_{d(on)}$	$V_{DD} = 250\text{ V}, R_L = 13\ \Omega$ $I_D \cong 13\text{ A}, V_{GEN} = 10\text{ V}, R_G = 2.4\ \Omega$		13	35	ns
Rise Time ^c	t_r			26	50	
Turn-Off Delay Time ^c	$t_{d(off)}$			55	150	
Fall Time ^c	t_f			17	70	
Source-Drain Diode Ratings and Characteristics						
Continuous Current	I_S				13	A
Pulsed Current	I_{SM}				50	
Diode Forward Voltage ^b	V_{SD}	$I_F = 13\text{ A}, V_{GS} = 0\text{ V}$	0.80		1.6	V
Reverse Recovery Time	t_{rr}	$I_F = 13\text{ A}, di/dt = 100\text{ A}/\mu\text{s}$		400	1000	ns
Reverse Recovery Charge	Q_{rr}			2.0		μC

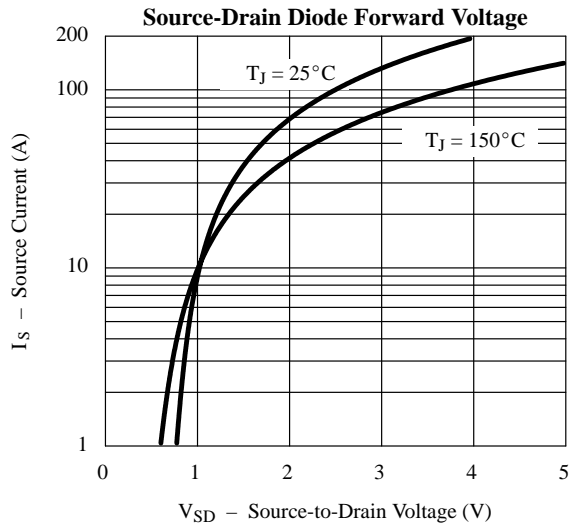
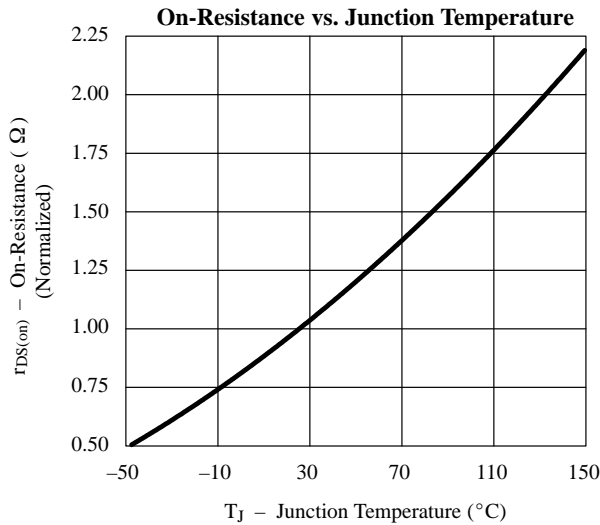
Notes:

- For design aid only; not subject to production testing.
- Pulse test; pulse width $\leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$.
- Independent of operating temperature.

Typical Characteristics (25°C Unless Otherwise Noted)



Typical Characteristics (25°C Unless Otherwise Noted)



Thermal Ratings

