

N-Channel Enhancement-Mode MOSFETs, Logic Level

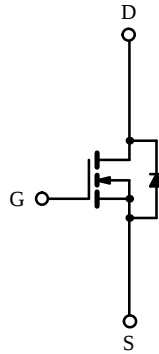
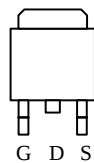
Product Summary

$V_{(BR)DSS}$ (V)	$r_{DS(on)}$ (Ω)	I_D (A) ^a
30	0.01 @ $V_{GS} = 10$ V	60

175°C Rated
Maximum Junction Temperature

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TO-263



N-Channel MOSFET

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

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current ($T_J = 175^\circ\text{C}$)	$T_C = 25^\circ\text{C}$	I_D	60	A
	$T_C = 100^\circ\text{C}$		51	
Pulsed Drain Current		I_{DM}	240	
Continuous Source Current (Diode Conduction)		I_S	60	
Avalanche Current ^b		I_{AR}	60	
Repetitive Avalanche Energy ^b	$L = 0.1$ mH	E_{AS}	180	mJ
	$L = 0.05$ mH	E_{AR}	90	
Maximum Power Dissipation	$T_C = 25^\circ\text{C}$	P_D	125	W
	$T_C = 100^\circ\text{C}$		62 ^a	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 175	$^\circ\text{C}$
Lead Temperature ($1/16$ " from case for 10 sec.)		T_L	300	

Thermal Resistance Ratings

Parameter	Symbol	Limit	Unit
Maximum Junction-to-Ambient	R_{thJA}	80	$^\circ\text{C/W}$
Maximum Junction-to-Case	R_{thJC}	1.2	

Notes:

- a. Package Limited
- b. Duty Cycle $\leq 1\%$

Updates to this data sheet may be obtained via facsimile by calling Siliconix FaxBack, 1-408-970-5600. Please request FaxBack document #70269.

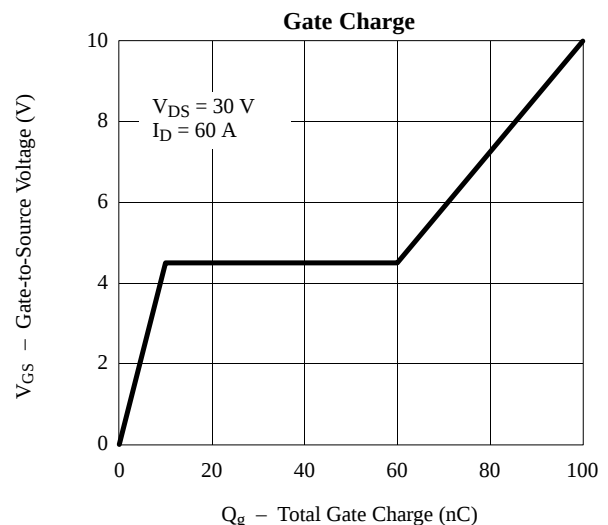
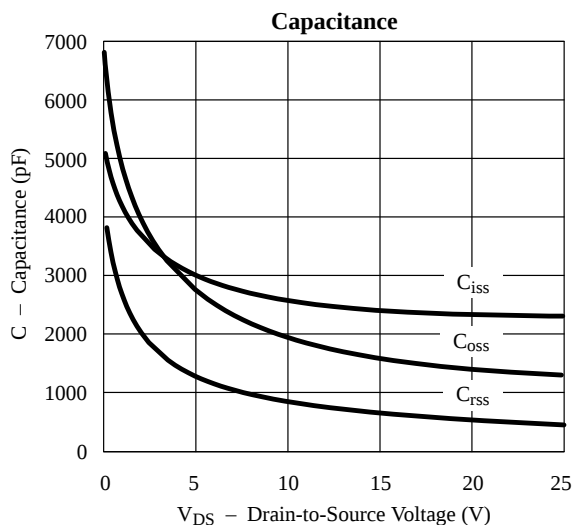
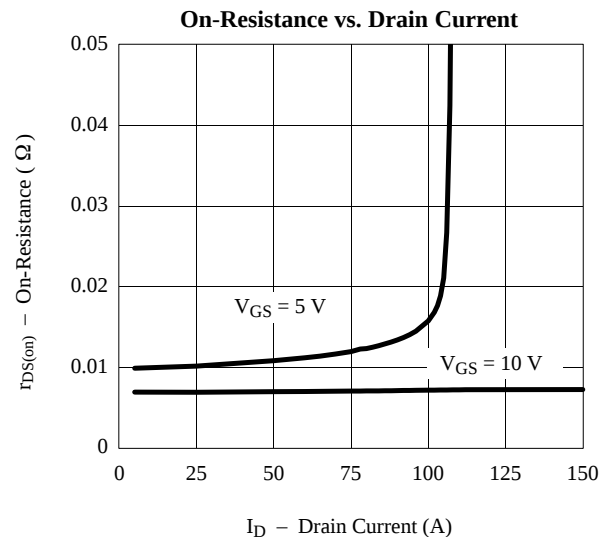
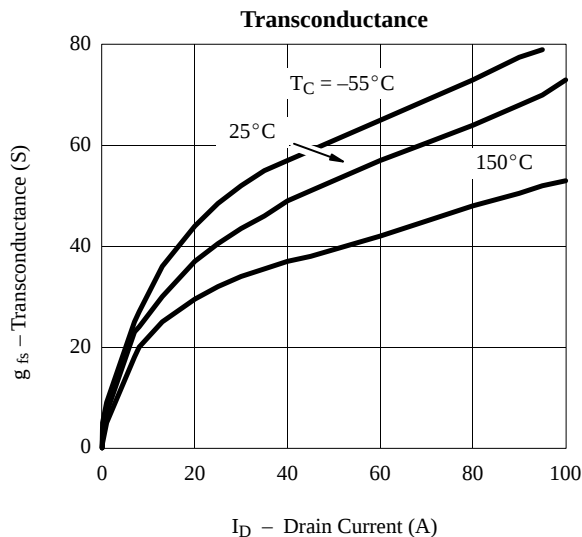
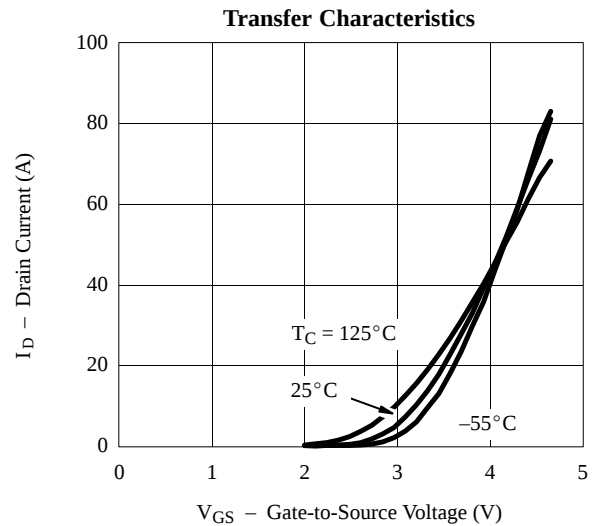
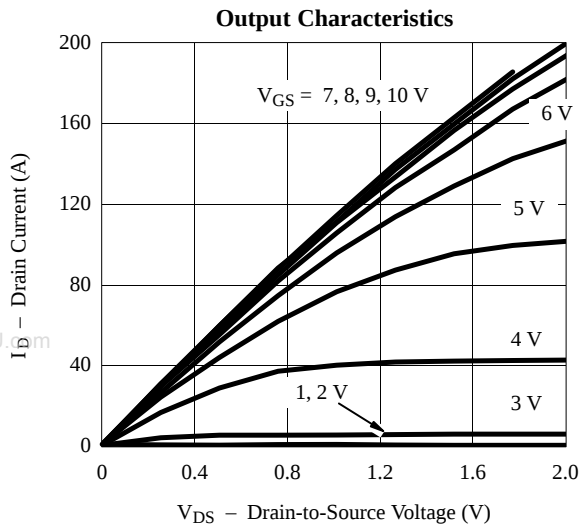
Specifications ($T_J = 25^\circ\text{C}$ Unless Otherwise Noted)

Parameter	Symbol	Test Condition	Min	Typ ^a	Max	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = 250 μA	30			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 1 mA	0.8		3.0	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 20 V			± 500	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 30 V, V _{GS} = 0 V			25	μA
		V _{DS} = 30 V, V _{GS} = 0 V, T _J = 125°C			250	
		V _{DS} = 30 V, V _{GS} = 0 V, T _J = 175°C			500	
On-State Drain Current ^b	I _{D(on)}	V _{DS} = 10 V, V _{GS} = 10V	60			A
Drain-Source On-State Resistance ^b	r _{DS(on)}	V _{GS} = 10 V, I _D = 30 A		0.007	0.01	Ω
		V _{GS} = 10 V, I _D = 30 A, T _J = 125°C		0.009	0.016	
		V _{GS} = 10 V, I _D = 30 A, T _J = 175°C			0.020	
		V _{GS} = 5 V, I _D = 30 A		0.010	0.015	
Forward Transconductance ^b	g _{fs}	V _{DS} = 15 V, I _D = 30 A		44		S
Dynamic						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz		2600		pF
Output Capacitance	C _{oss}			1500		
Reverse Transfer Capacitance	C _{rss}			750		
Total Gate Charge ^c	Q _g	V _{DS} = 15 V, V _{GS} = 10 V, I _D = 60 A		100	120	nC
Gate-Source Charge ^c	Q _{gs}			10	15	
Gate-Drain Charge ^c	Q _{gd}			45	75	
Turn-On Delay Time ^c	t _{d(on)}	V _{DD} = 30 V, R _L = 1 Ω I _D ≈ 30 A, V _{GEN} = 10 V, R _G = 2.5 Ω		14	30	ns
Rise Time ^c	t _r			25	50	
Turn-Off Delay Time ^c	t _{d(off)}			65	100	
Fall Time ^c	t _f			45	80	
Source-Drain Diode Ratings and Characteristics (T _C = 25°C)						
Pulsed Current	I _{SM}				240	A
Diode Forward Voltage	V _{SD}	I _S = I _F = 60 A, V _{GS} = 0 V			1.6	V
Reverse Recovery Time	t _{rr}	I _F = 60 A, di/dt = 100 A/μs		160		ns
Peak Reverse Recovery Current	I _{RM(REC)}			13		A
Reverse Recovery Charge	Q _{rr}			1.0		μC

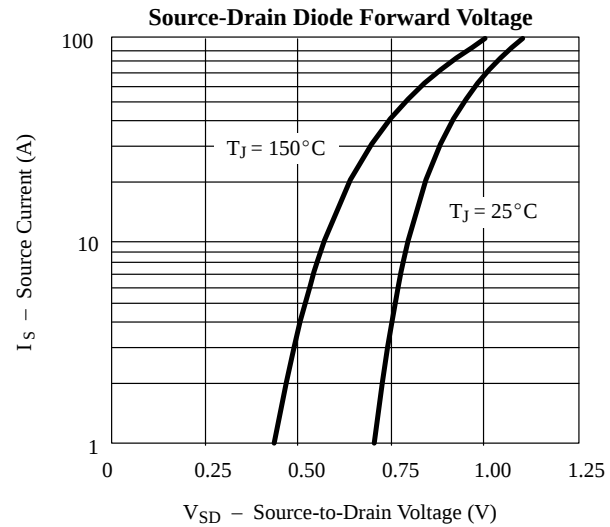
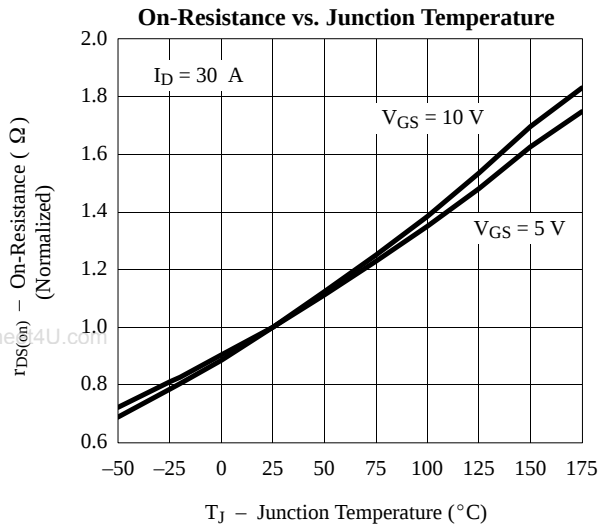
Notes:

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

Typical Characteristics (25°C Unless Otherwise Noted)



Typical Characteristics (25°C Unless Otherwise Noted)



Thermal Ratings

