DIGITRON™ Semiconductors

High-reliability discrete products
and engineering services since 1977

2N6660

60V N-CHANNEL MOSFET

FEATURES

- Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number.
- Available as non-RoHS (Sn/Pb plating), standard, and as RoHS by adding "-PBF" suffix.

MAXIMUM RATINGS

Parameter		Symbol	Limit	Unit
Drain-source voltage		V_{DS}	60	V
Gate-source voltage		V_{GS}	±20	
Continuous drain current (T_J = 150°C)	T_C = 25°C	I_D	0.99	A
	T_C = 100C		0.62	
Pulse drain current [1]		I_{DM}	3	
Maximum power dissipation	T_C = 25°C	P_D	6.25	W
	T_A = 25°C		0.725	
Thermal resistance, junction to ambient		R_{thJA}	170	°C/W
Thermal resistance, junction to case		R_{thJC}	20	
Operating junction and storage temperature range		T_J, T_{stg}	-55 to +150	°C

1. Pulse width limited by maximum junction temperature

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise specified)

Parameter	Symbol	Test Conditions			Limits Min	Limits Typ	Limits Max	Unit
STATIC								
Drain-source breakdown voltage	V_{DS}	V_{DS} = 0V, I_D = 10µA			60	75	-	V
Gate-source threshold voltage	$V_{GS(th)}$	V_{DS} = VGS, I_D = 1mA			0.8	1.7	2	V
		V_{DS} = V_{GS}, I_D = 1mA		T_C = -55°C	-	-	2.5	
		V_{DS} = V_{GS}, I_D = 1mA		T_C = 125°C	0.3	-	-	
Gate-body leakage	I_{GSS}	V_{GS} = ±20V		V_{DS} = 0V	-	-	±100	nA
		V_{GS} = ±20V	V_{DS} = 0V	T_C = 125°C	-	-	±500	
Zero gate voltage drain current	I_{DSS}	V_{GS} =0V	V_{DS} = 48V		-	-	1	µA
		V_{GS} =0V	V_{DS} = 48V	T_C = 125°C	-	-	100	µA
On-state drain current	$I_{D(on)}$	V_{GS} = 10V	V_{DS} = 10V		-	2	-	A
Drain-source on-state resistance [a]	$R_{DS(on)}$	V_{GS} = 5V	I_D = 0.3A		-	2	5	Ω
		V_{GS} = 10V	I_D = 1A		-	1.3	3	
		V_{GS} = 10V	I_D = 1A	T_C = 125°C	-	2.4	5.6	
Forward transconductance [a]	g_{fs}	V_{DS} = 7.5V, I_D = 0.525A			170	350	-	mS
Diode forward voltage	V_{SD}	I_S = 0.99A, V_{GS} = 0V			0.7	0.8	1.6	V
DYNAMIC								
Input capacitance	C_{iss}	V_{GS} = 0V	V_{DS} = 25V, f = 1MHz		-	35	50	pF
Output capacitance	C_{oss}				-	25	40	
Reverse transfer capacitance	C_{rss}				-	7	10	

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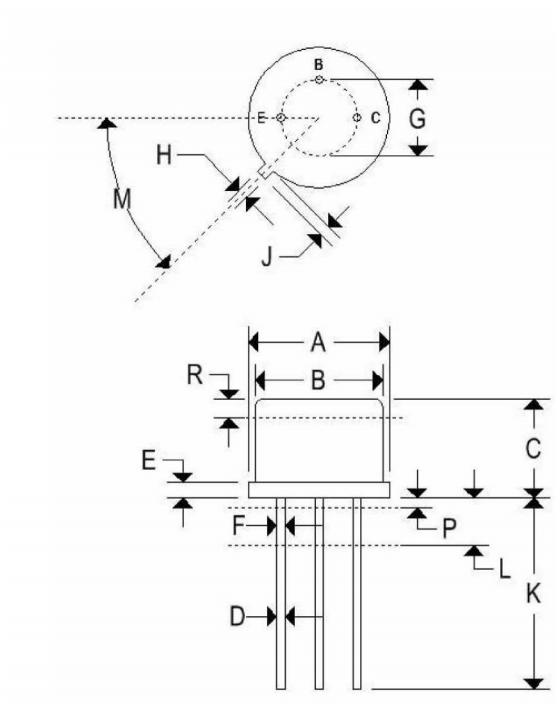
Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ	Max	
Drain-source capacitance	C_{ds}		-	30	-	
SWITCHING [b]						
Turn-on time	t_{ON}	V_{DD} = 25V, R_L = 23 Ω, I_D ~/= 1A , V_{GEN} = 10V, R_g = 25Ω	-	8	10	nS
Turn-off time	t_{OFF}		-	8.5	10	

a. Pulse test: PW ≤ 300μs duty cycle ≤ 2%.
b. Switching time is essentially independent of operating temperature.

MECHANICAL CHARACTERISTICS

Case	TO-39
Marking	Alpha-numeric
Pin out	See below



	TO-39			
	Inches		Millimeters	
	Min	Max	Min	Max
A	0.350	0.370	8.890	9.400
B	0.315	0.335	8.000	8.510
C	0.240	0.260	6.10	6.60
D	0.016	0.021	0.406	0.533
E	0.009	0.125	0.2269	3.180
F	0.016	0.019	0.406	0.533
G	0.190	0.210	4.830	5.33
H	0.028	0.034	0.711	0.864
J	0.029	0.040	0.737	1.020
K	0.500	-	12.700	-
L	0.250	-	6.350	-
M	45° NOM		45° NOM	
P	-	0.050	-	1.270
Q	90° NOM		90° NOM	
R	0.100	-	2.540	-

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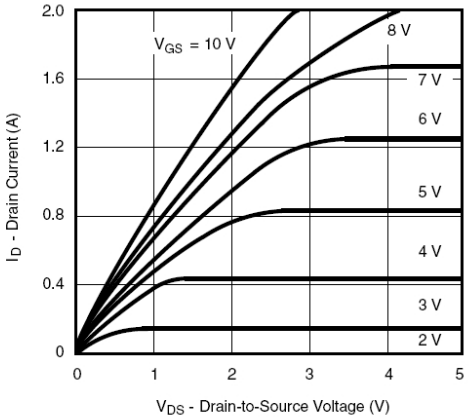
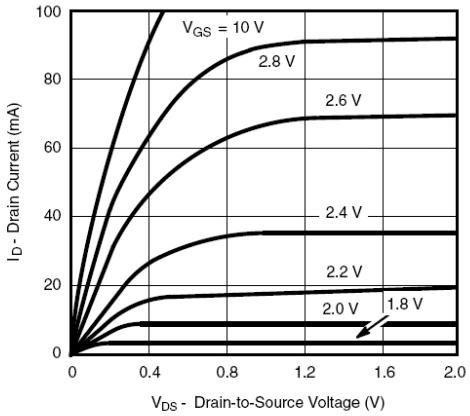
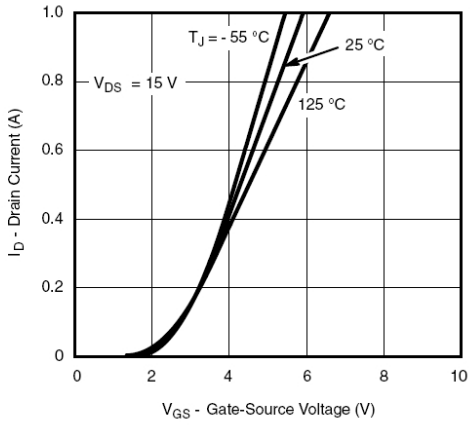


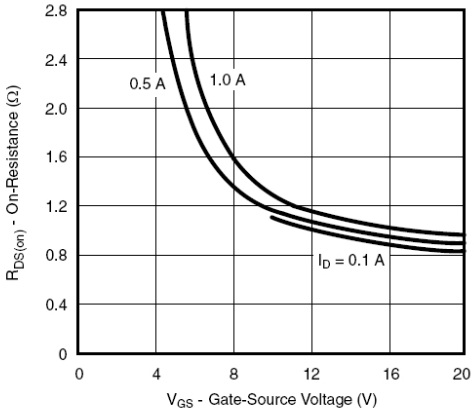
Ohmic Region Characteristics



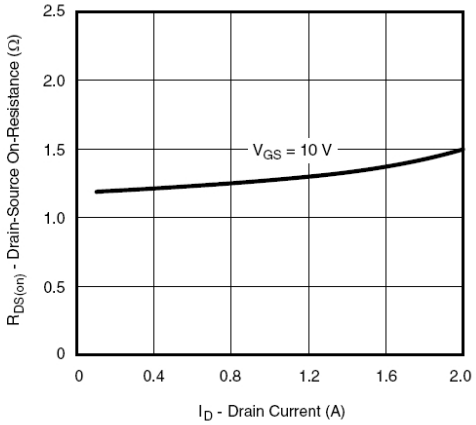
Output Characteristics for Low Gate Drive



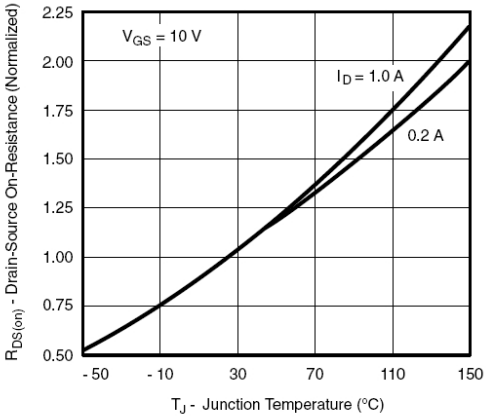
Transfer Characteristics



On-Resistance vs. Gate-to-Source Voltage



On-Resistance vs. Drain Current



Normalized On-Resistance vs. Junction Temperature

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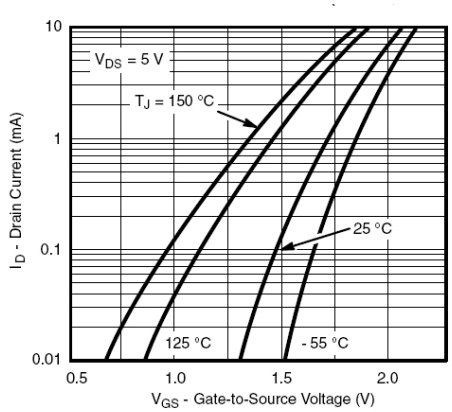
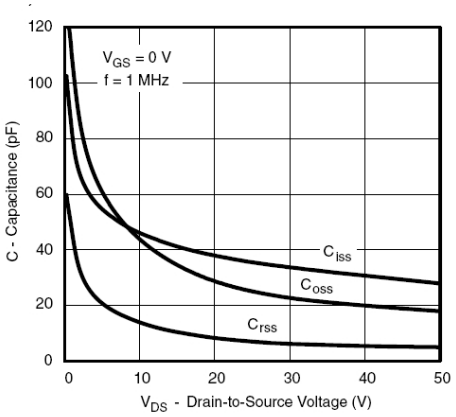
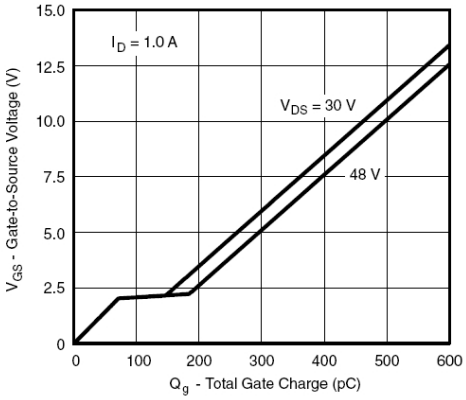


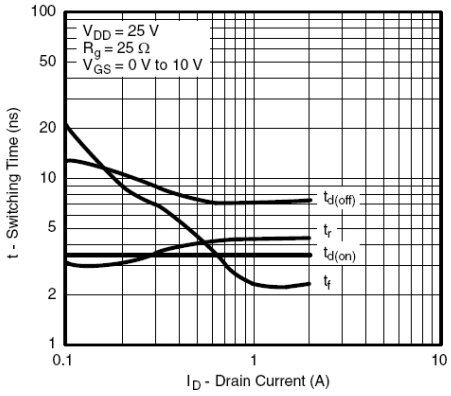
Threshold Region



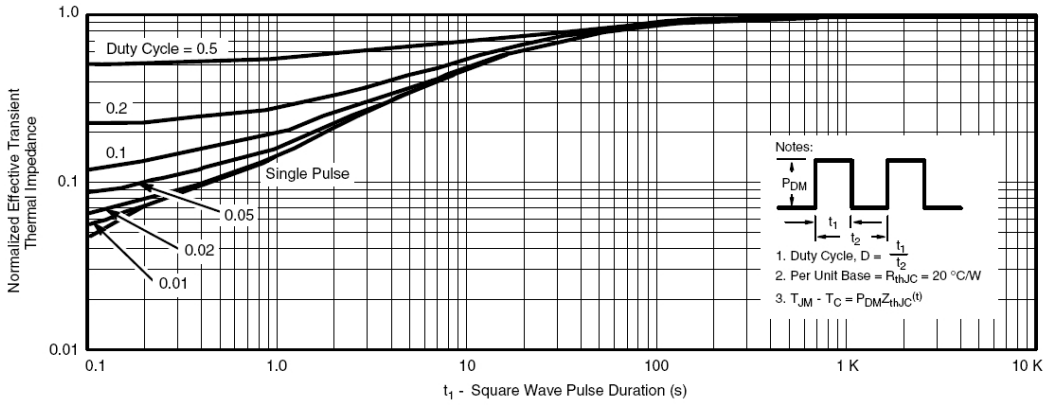
Capacitance



Gate Charge



Load Condition Effects on Switching



Normalized Thermal Transient Impedance, Junction-to-Ambient