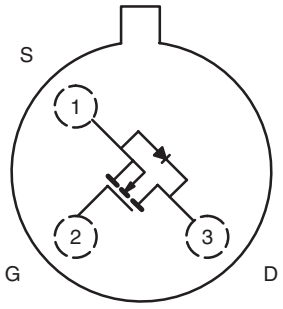
JAN Qualified N-Channel 60-V (D-S) MOSFET

PRODUCT SUMMARY			
$V_{(BR)DSS}$ Min (V)	$r_{DS(on)}$ Max (Ω)	$V_{GS(th)}$ (V)	I_D (A)
60	3 at V_{GS} = 10 V	0.8 to 2	0.99

TO-205AD
(TO-39)



Top View

FEATURES

- Military Qualified
- Low On-Resistence: 1.3 Ω
- Low Threshold: 1.7 V
- Low Input Capacitance: 35 pF
- Fast Switching Speed: 8 ns
- Low Input and Output Leakage

BENEFITS

- Guaranteed Reliability
- Low Offset Voltage
- Low-Voltage Operation
- Easily Driven Without Buffer
- High-Speed Circuits
- Low Error Voltage

APPLICATIONS

- Military Applications
- Direct Logic-Level Interface: TTL/CMOS
- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories, Transistors, etc.
- Battery Operated Systems
- Solid-State Relays

ABSOLUTE MAXIMUM RATINGS T_A = 25 °C, unless otherwise noted

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 = 100 °C		0.62	
Pulsed Drain Current[a]		I_{DM}	3	
Power Dissipation	T_C = 25 °C	P_D	6.25	W
	T_A = 25 °C		0.725	
Thermal Resistance, Junction-to-Ambient[b]		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

Notes:
a. Pulse width limited by maximum junction temperature.
b. Not required by military spec.

SPECIFICATIONS[a] T_A = 25 °C, unless otherwise noted						
			Limits			
Parameter	**Symbol**	**Test Conditions**	**Min**	**Typ**[b]	**Max**	**Unit**
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{DS} = 0 V, I_D = 10 µA	60	75		V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 1 mA	0.8	1.7	2	V
		T_C = - 55 °C			2.5	
		T_C = 125 °C	0.3			
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ± 20 V			± 100	nA
		T_C = 125 °C			± 500	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 48 V, V_{GS} = 0 V			1	µA
		T_C = 125 °C			100	
On-State Drain Current	$I_{D(on)}$	V_{DS} = 10 V, V_{GS} = 10 V		2		A
Drain-Source On-Resistance[c]	$r_{DS(on)}$	V_{GS} = 5 V, I_D = 0.3 A		2	5	Ω
		V_{GS} = 10 V, I_D = 1 A		1.3	3	
		T_C = 125 °C		2.4	5.6	
Forward Transconductance[c]	g_{fs}	V_{DS} = 7.5 V, I_D = 0.525 A	170	350		mS
Diode Forward Voltage	V_{SD}	I_S = 0.99 A, V_{GS} = 0 V	0.7	0.8	1.6	V
Dynamic						
Input Capacitance	C_{iss}	V_{DS} = 25 V, V_{GS} = 0 V, f = 1 MHz		35	50	pF
Output Capacitance	C_{oss}			25	40	
Reverse Transfer Capacitance	C_{rss}			7	10	
Drain-Source Capacitance	C_{ds}			30		
Switching[d]						
Turn-On Time	t_{ON}	V_{DD} = 25 V, R_L = 23 Ω		8	10	ns
Turn-Off Time	t_{OFF}	$I_D \cong$ 1 A, V_{GEN} = 10 V, R_g = 25 Ω		8.5	10	

Notes:

a. T_A = 25 °C unless otherwise noted.

b. FOR DESIGN AID ONLY, not subject to production testing.

c. Pulse test: PW ≤ 300 µs duty cycle ≤ 2 %.

d. Switching time is essentially independent of operating temperature.

e. For typical characteristics curves see the 2N6659/2N6660, VQ1004J/P data sheet.

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

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