



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

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

FEATURES

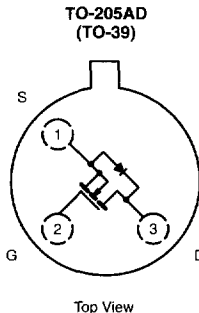
- Military Qualified
- Low On-Resistance: 1.3  $\Omega$
- Low Threshold: 1.7 V
- Low Input Capacitance: 35 pF
- Fast Switching Speed: 8 ns
- Low Input and Output Leakage

BENEFITS

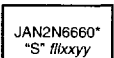
- Guaranteed Reliability
- Low Offset Voltage
- Low-Voltage Operation
- Easily Driven Without Buffer
- High-Speed Circuits
- Low Error Voltage

APPLICATIONS

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



Device Marking Side View



\*S = Siliconix Logo  
 f = Factory Code  
 // = Lot Traceability  
 xxyy = Date Code

\*Note: or JANTX2N6660  
 JANTXV2N6660

ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)			
Parameter	Symbol	Limit	Unit
Drain-Source Voltage	$V_{DS}$	60	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	
Continuous Drain Current ( $T_J = 150^\circ\text{C}$ )	$I_D$	$T_C = 25^\circ\text{C}$	0.99
		$T_C = 100^\circ\text{C}$	0.62
Pulsed Drain Current <sup>a</sup>	$I_{DM}$	3	A
Power Dissipation	$P_D$	$T_C = 25^\circ\text{C}$	6.25
		$T_A = 25^\circ\text{C}$	0.725
Thermal Resistance, Junction-to-Ambient <sup>b</sup>	$R_{\theta JA}$	170	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	20	
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-55 to 150	$^\circ\text{C}$

Notes  
 a. Pulse width limited by maximum junction temperature.  
 b. Not required by Military Spec.



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

Notes

- a.  $T_A = 25^\circ\text{C}$  unless otherwise noted.
- b. For DESIGN AID ONLY, not subject to production testing.
- c. Pulse test.  $PW \leq 300\ \mu\text{s}$  duty cycle  $\leq 2\%$ .
- d. Switching time is essentially independent of operating temperature.
- e. For typical characteristics curves see the 2N6659/2N6660, VQ1004/J/P data sheet.

VNDQ06