

2N7071

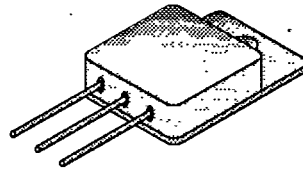
T-39-13

N-Channel Enhancement Mode Transistor

PRODUCT SUMMARY

$V_{(BR)DSS}$ (V)	$r_{DS(ON)}$ (Ω)	I_D (A)
100	0.100	23

TO-254AA
Hermetic Package



TOP VIEW



1 DRAIN
2 SOURCE
3 GATE

Case Isolated

ABSOLUTE MAXIMUM RATINGS ($T_C = 25^\circ\text{C}$ Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current	$T_C = 25^\circ\text{C}$	I_D	23	A
	$T_C = 100^\circ\text{C}$		15	
Pulsed Drain Current ¹		I_{DM}	92	
Power Dissipation	$T_C = 25^\circ\text{C}$	P_D	100	W
	$T_C = 100^\circ\text{C}$		40	
Operating Junction & 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	

4

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	R_{thJC}		1.25	K/W
Junction-to-Ambient	R_{thJA}		50	
Case-to-Sink	R_{thCS}	0.2		

¹Pulse width limited by maximum junction temperature (refer to transient thermal impedance data, Figure 11).

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

T-39-13

PARAMETER	SYMBOL	TEST CONDITIONS	TYP	LIMITS		UNIT
				MIN	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}, I_D = 250\ \mu\text{A}$		100		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}	$V_{DS} = 80\text{ V}, V_{GS} = 0\text{ V}$			25	μA
		$V_{DS} = 80\text{ V}, V_{GS} = 0\text{ V}, T_J = 125^\circ\text{C}$			250	
On-State Drain Current ¹	$I_{D(ON)}$	$V_{DS} = 5\text{ V}, V_{GS} = 10\text{ V}$		24		A
Drain-Source On-State Resistance ¹	$r_{DS(ON)}$	$V_{GS} = 10\text{ V}, I_D = 15\text{ A}$	0.075		0.100	Ω
		$V_{GS} = 10\text{ V}, I_D = 15\text{ A}, T_J = 125^\circ\text{C}$	0.12		0.16	
Forward Transconductance ¹	g_{fs}	$V_{DS} = 15\text{ V}, I_D = 15\text{ A}$	10	6.0	18	S
DYNAMIC						
Input Capacitance	C_{iss}	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$	1550			pF
Output Capacitance	C_{oss}		550			
Reverse Transfer Capacitance	C_{rss}		150			
Total Gate Charge ²	Q_g	$V_{DS} = 0.5 \times V_{(BR)DSS}, V_{GS} = 10\text{ V}, I_D = 23\text{ A}$	50	30	77	nC
Gate-Source Charge ²	Q_{gs}		10	4.6	13	
Gate-Drain Charge ²	Q_{gd}		23	13	35	
Turn-On Delay Time ²	$t_{d(on)}$	$V_{DD} = 50\text{ V}, R_L = 2.1\ \Omega$ $I_D \approx 23\text{ A}, V_{GEN} = 10\text{ V}, R_G = 4.7\ \Omega$	15		30	ns
Rise Time ²	t_r		80		120	
Turn-Off Delay Time ²	$t_{d(off)}$		40		80	
Fall Time ²	t_f		30		60	
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS						
Continuous Current	I_S				23	A
Pulsed Current ³	I_{SM}				92	
Forward Voltage ¹	V_{SD}	$I_F = I_S, V_{GS} = 0\text{ V}$		0.6	2.0	V
Reverse Recovery Time	t_{rr}	$I_F = I_S, dI_F/dt = 100\text{ A}/\mu\text{s}$	150		300	ns
Reverse Recovery Charge	Q_{rr}		0.5			μC

¹Pulse test: Pulse Width $\leq 300\ \mu\text{sec}$, Duty Cycle $\leq 2\%$.²Independent of operating temperature.³Pulse width limited by maximum junction temperature (refer to transient thermal impedance data, Figure 11).



Figure 1. Output Characteristics

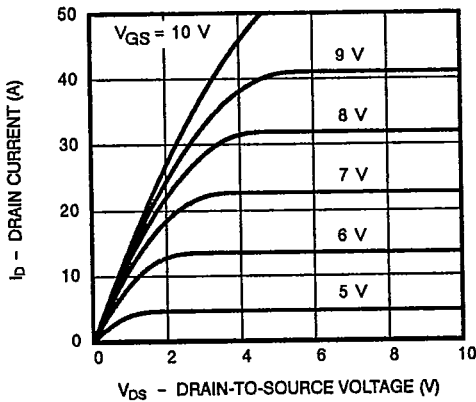


Figure 2. Transfer Characteristics

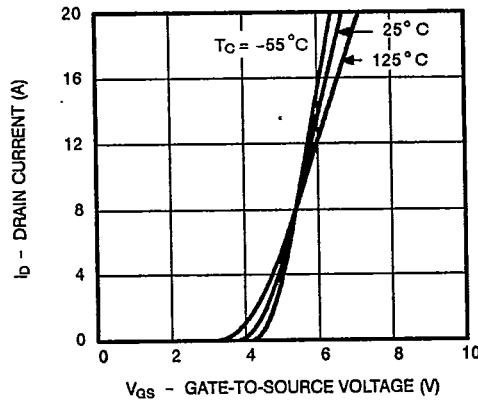


Figure 3. Transconductance

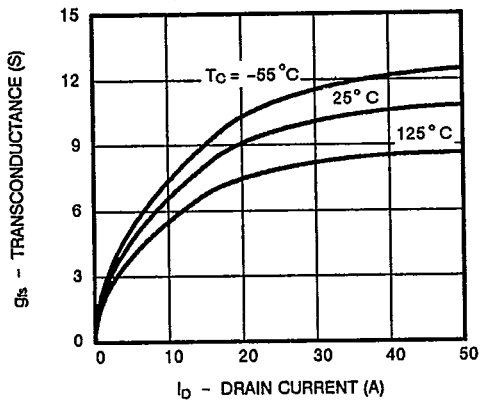
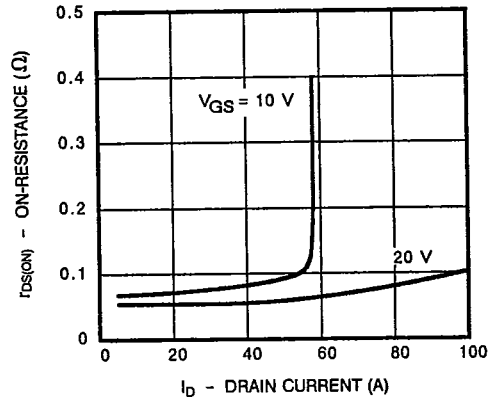


Figure 4. On-Resistance



4

Figure 5. Capacitance

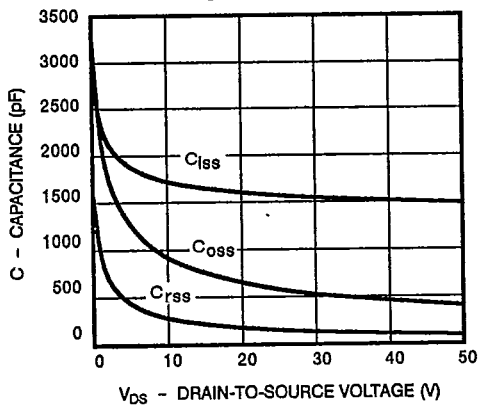
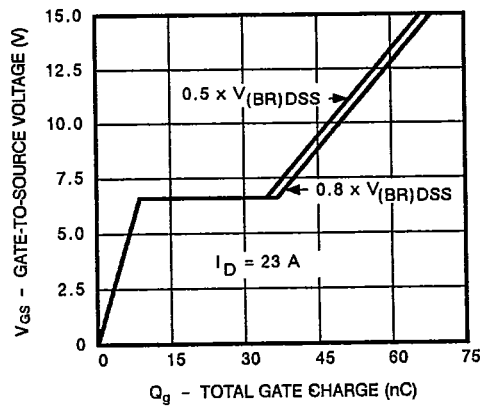
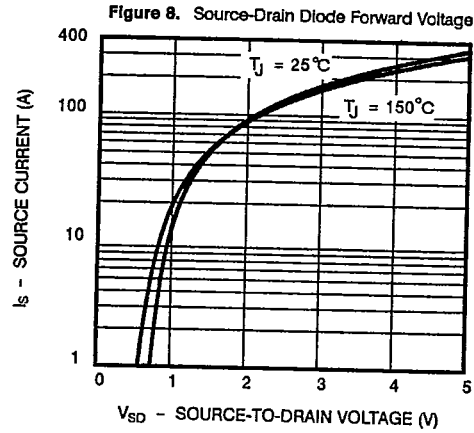
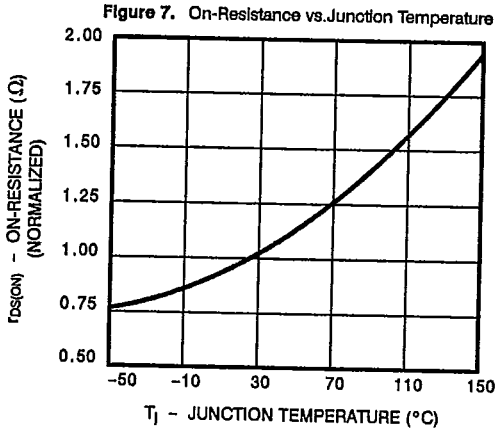


Figure 6. Gate Charge



TYPICAL CHARACTERISTICS (Cont'd)

T-39-13.



THERMAL RATINGS

