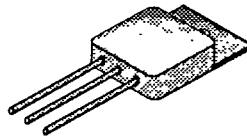


T-39-11

N-Channel Enhancement Mode Transistor

TO-257AB
 Hermetic Package

TOP VIEW



1 GATE
 2 DRAIN
 3 SOURCE
 Case Isolated

PRODUCT SUMMARY

$V_{(BR)DSS}$ (V)	$r_{DS(ON)}$ (Ω)	I_D (A)
200	0.30	9.0

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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	200	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current	$T_C = 25^\circ\text{C}$	I_D	9.0	A
	$T_C = 100^\circ\text{C}$		5.5	
Pulsed Drain Current ¹		I_{DM}	36	
Power Dissipation	$T_C = 25^\circ\text{C}$	P_D	50	W
	$T_C = 100^\circ\text{C}$		20	
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	

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THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	R_{thJC}		2.5	K/W
Junction-to-Ambient	R_{thJA}		80	
Case-to-Sink	R_{thCS}	1.0		

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



ELECTRICAL CHARACTERISTICS (T_J = 25°C Unless Otherwise Noted)

T-39-11

PARAMETER	SYMBOL	TEST CONDITIONS	TYP	LIMITS		UNIT
				MIN	MAX	
STATIC						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = 250 μA		200		V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA		2.0	4.0	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 160 V, V _{GS} = 0 V			25	μA
		V _{DS} = 160 V, V _{GS} = 0 V, T _J = 125°C			250	
On-State Drain Current ¹	I _{D(ON)}	V _{DS} = 10 V, V _{GS} = 10 V		9.0		A
Drain-Source On-State Resistance ¹	r _{DS(ON)}	V _{GS} = 10 V, I _D = 5.5 A	0.25		0.30	Ω
		V _{GS} = 10 V, I _D = 5.5 A, T _J = 125°C	0.50		0.60	
Forward Transconductance ¹	g _{fs}	V _{DS} = 15 V, I _D = 5.5 A	3.8	3.0		S

DYNAMIC

Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz	780			pF
Output Capacitance	C _{oss}		220			
Reverse Transfer Capacitance	C _{rss}		70			
Total Gate Charge ²	Q _g	V _{DS} = 0.5 × V _{(BR)DSS} , V _{GS} = 10 V, I _D = 9 A	23	14	39	nC
Gate-Source Charge ²	Q _{gs}		5	2.2	7.0	
Gate-Drain Charge ²	Q _{gd}		13	8.0	20	
Turn-On Delay Time ²	t _{d(on)}	V _{DD} = 50 V, R _L = 11 Ω I _D ≈ 9 A, V _{GEN} = 10 V, R _G = 7.5 Ω	8		30	ns
Rise Time ²	t _r		50		80	
Turn-Off Delay Time ²	t _{d(off)}		35		60	
Fall Time ²	t _f		20		40	

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

Continuous Current	I _S				9.0	A
Pulsed Current ³	I _{SM}				36	
Forward Voltage ¹	V _{SD}	I _F = I _S , V _{GS} = 0 V			2.5	V
Reverse Recovery Time	t _{rr}	I _F = I _S , di _F /dt = 100 A/μs	150		500	ns
Reverse Recovery Charge	Q _{rr}		0.8			

¹Pulse test: Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

²Independent of operating temperature.

³Pulse width limited by maximum junction temperature (refer to transient thermal impedance data, Figure 11).



2N7082

TYPICAL CHARACTERISTICS (25°C Unless Otherwise Specified)

T-39-11

Figure 1. Output Characteristics

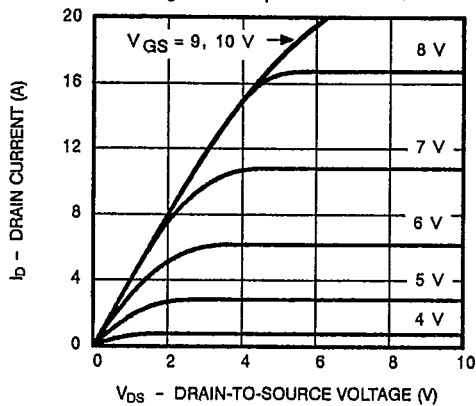


Figure 2. Transfer Characteristics

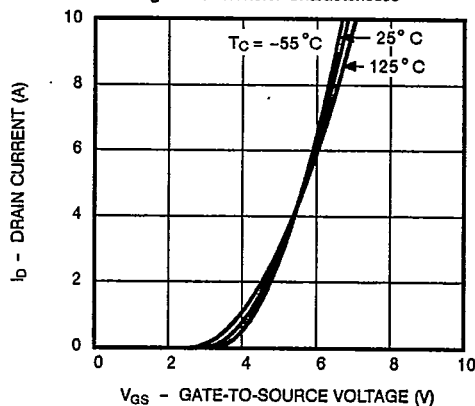


Figure 3. Transconductance

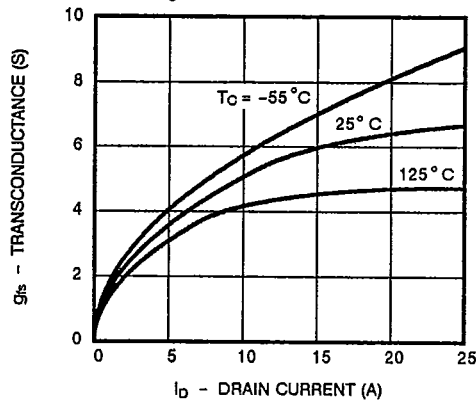
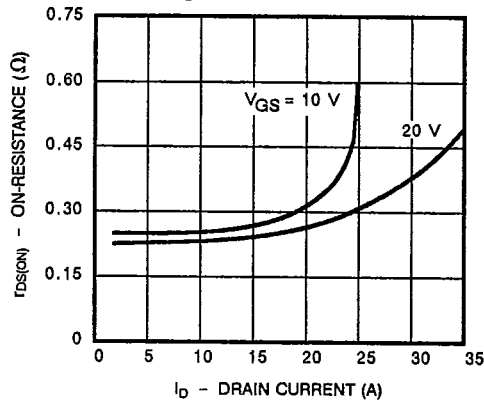


Figure 4. On-Resistance



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Figure 5. Capacitance

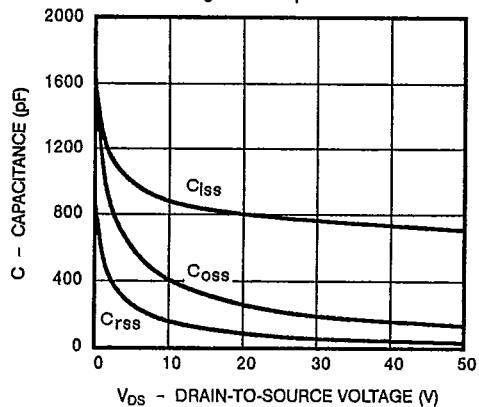
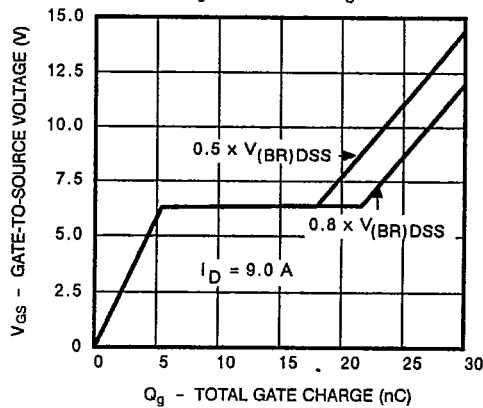


Figure 6. Gate Charge



TYPICAL CHARACTERISTICS (Cont'd)

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Figure 7. On-Resistance vs. Junction Temperature

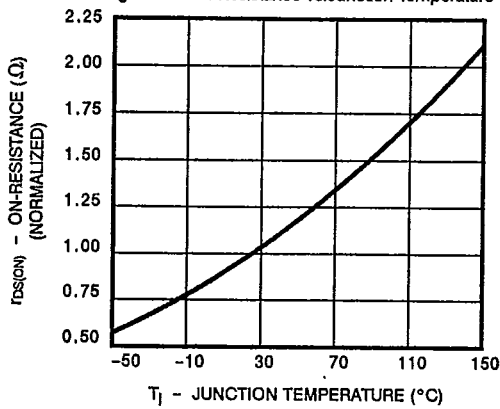
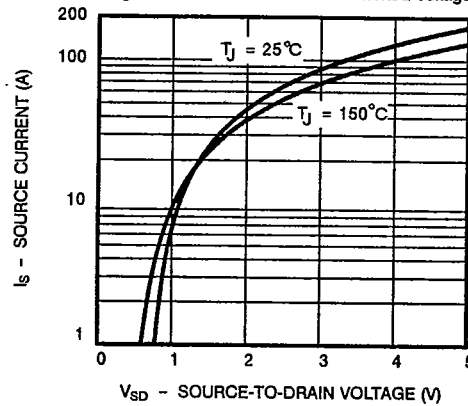


Figure 8. Source-Drain Diode Forward Voltage



THERMAL RATINGS

Figure 9. Maximum Drain Current vs. Case Temperature

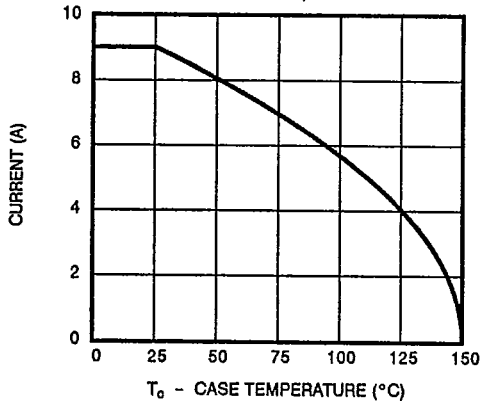


Figure 10. Safe Operating Area

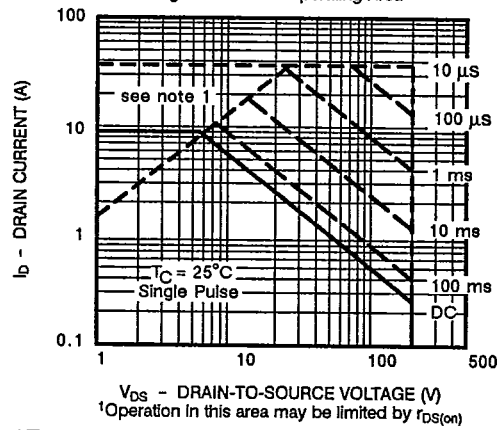


Figure 11. Normalized Effective Transient Thermal Impedance, Junction-to-Case

