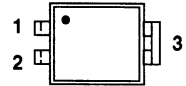
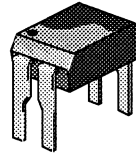


4-PIN DIP
(Similar to TO-250)

TOP VIEW

PRODUCT SUMMARY

$V_{(BR)DSS}$ (V)	$r_{DS(ON)}$ (Ω)	I_D (A)
-100	1.2	-0.70



1 GATE
2 SOURCE
3 DRAIN

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ Unless Otherwise Noted)¹

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current	$T_A = 25^\circ\text{C}$	I_D	0.70	A
	$T_A = 100^\circ\text{C}$		0.44	
Pulsed Drain Current ²		I_{DM}	3.0	
Power Dissipation	$T_A = 25^\circ\text{C}$	P_D	1.0	W
	$T_A = 100^\circ\text{C}$		0.4	
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	

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient	R_{thJA}		120	K/W

¹Negative signs for current and voltage ratings have been omitted for the sake of clarity.

²Pulse width limited by maximum junction temperature.

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

P-Channel Device - Negative Signs Have Been Omitted for Clarity

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}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$			± 500	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = V_{(BR)DSS}, V_{GS} = 0\text{ V}$			250	μA
		$V_{DS} = 0.8 \times V_{(BR)DSS}, V_{GS} = 0\text{ V}, T_J = 125^\circ\text{C}$			1000	
On-State Drain Current ¹	$I_{D(ON)}$	$V_{DS} = 5\text{ V}, V_{GS} = 10\text{ V}$		0.70		A
Drain-Source On-State Resistance ¹	$r_{DS(ON)}$	$V_{GS} = 10\text{ V}, I_D = 0.3\text{ A}$	1		1.2	Ω
		$V_{GS} = 10\text{ V}, I_D = 0.3\text{ A}, T_J = 125^\circ\text{C}$	1.6		2.0	
Forward Transconductance ¹	g_{fs}	$V_{DS} = 15\text{ V}, I_D = 0.3\text{ A}$	0.5	0.3		S
DYNAMIC						
Input Capacitance	C_{iss}	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$	150		250	pF
Output Capacitance	C_{oss}		65		120	
Reverse Transfer Capacitance	C_{rss}		25		45	
Total Gate Charge ²	Q_g	$V_{DS} = 0.8 \times V_{(BR)DSS}, V_{GS} = 10\text{ V}, I_D = 0.70\text{ A}$	6		15	nC
Gate-Source Charge ²	Q_{gs}		1			
Gate-Drain Charge ²	Q_{gd}		3.5			
Turn-On Delay Time ²	$t_{d(on)}$	$V_{DD} = 40\text{ V}, R_L = 130\ \Omega$ $I_D \approx 0.3\text{ A}, V_{GEN} = 10\text{ V}, R_G = 25\ \Omega$	7		30	ns
Rise Time ²	t_r		45		60	
Turn-Off Delay Time ²	$t_{d(off)}$		38		60	
Fall Time ²	t_f		55		75	
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ($T_A = 25^\circ\text{C}$)						
Continuous Current	I_S				0.7	A
Pulsed Current ³	I_{SM}				3.0	
Forward Voltage ¹	V_{SD}	$I_F = I_S, V_{GS} = 0\text{ V}$			5.5	V
Reverse Recovery Time	t_{rr}	$I_F = I_S, dI_F/dt = 100\text{ A}/\mu\text{s}$	70			ns
Reverse Recovery Charge	Q_{rr}		0.20			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.

TYPICAL CHARACTERISTICS (25°C Unless Otherwise Specified)

Figure 1. Output Characteristics

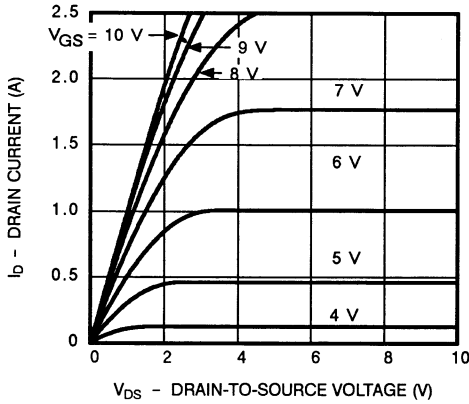


Figure 2. Transfer Characteristics

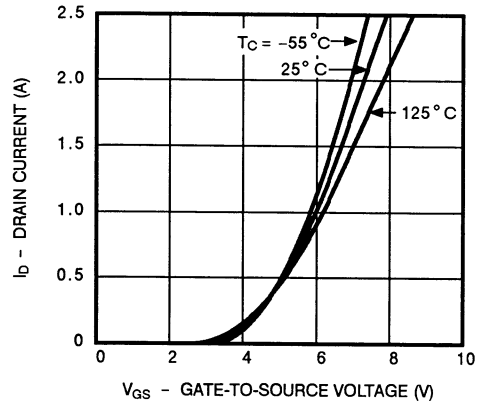


Figure 3. Transconductance

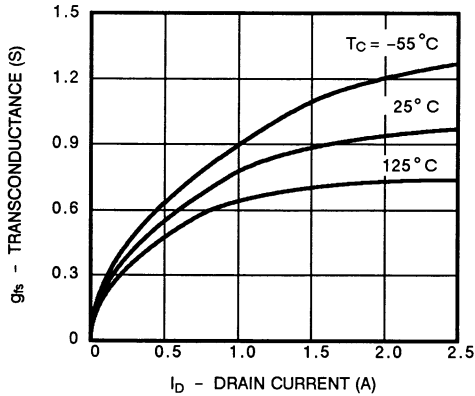


Figure 4. On-Resistance

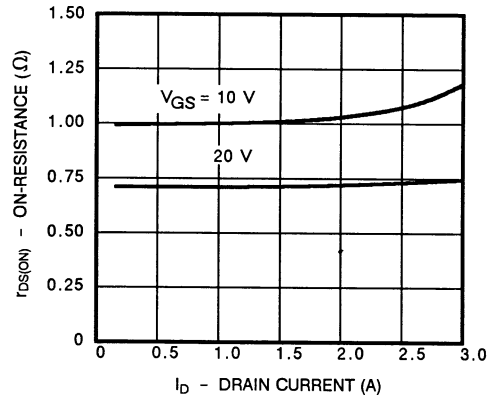


Figure 5. Capacitance

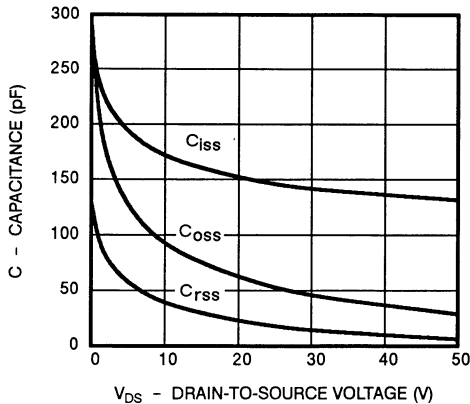
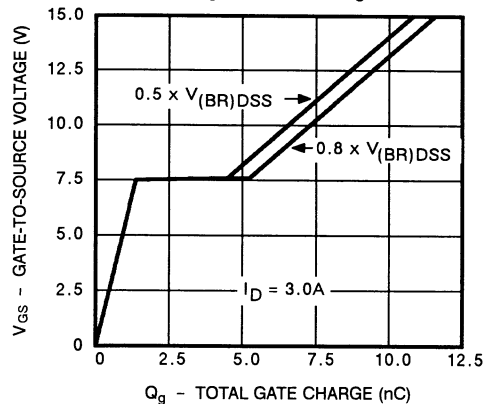


Figure 6. Gate Charge



4

TYPICAL CHARACTERISTICS (Cont'd)

Figure 7. On-Resistance vs. Junction Temperature

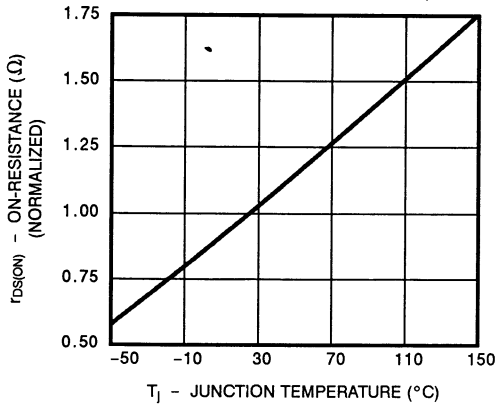
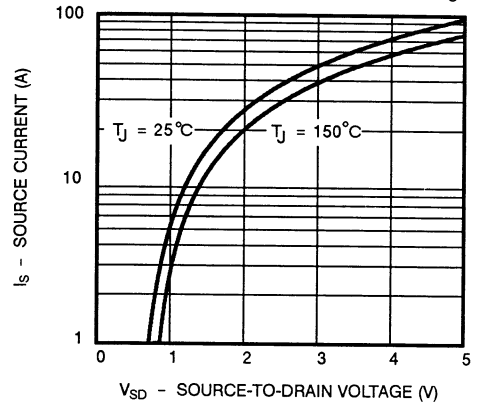


Figure 8. Source-Drain Diode Forward Voltage



THERMAL RATINGS

Figure 9. Maximum Drain Current vs. Case Temperature

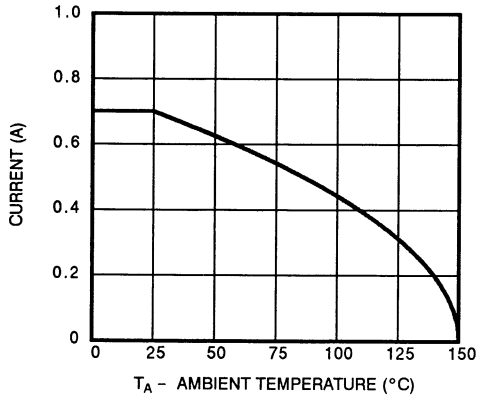
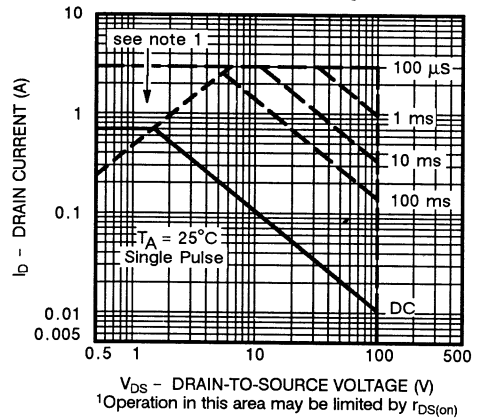


Figure 10. Safe Operating Area

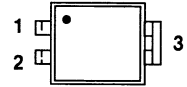
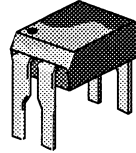


4-PIN DIP
(Similar to TO-250)

TOP VIEW

PRODUCT SUMMARY

$V_{(BR)DSS}$ (V)	$r_{DS(ON)}$ (Ω)	I_D (A)
-200	3.0	-0.40



1 GATE
2 SOURCE
3 DRAIN

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ Unless Otherwise Noted)¹

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	200	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current	$T_A = 25^\circ\text{C}$	I_D	0.40	A
	$T_A = 100^\circ\text{C}$		0.25	
Pulsed Drain Current ²		I_{DM}	1.6	
Power Dissipation	$T_A = 25^\circ\text{C}$	P_D	1.0	W
	$T_A = 100^\circ\text{C}$		0.4	
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	

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient	R_{thJA}		120	K/W

¹Negative signs for current and voltage ratings have been omitted for the sake of clarity.

²Pulse width limited by maximum junction temperature.

4

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

P-Channel Device – Negative Signs Have Been Omitted for Clarity

PARAMETER	SYMBOL	TEST CONDITIONS	TYP	LIMITS		UNIT
				MIN	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}, I_D = 250\ \mu\text{A}$		200		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}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$			± 500	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = V_{(BR)DSS}, V_{GS} = 0\text{ V}$			250	μA
		$V_{DS} = 0.8 \times V_{(BR)DSS}, V_{GS} = 0\text{ V}, T_J = 125^\circ\text{C}$			1000	
On-State Drain Current ¹	$I_{D(ON)}$	$V_{DS} = 5\text{ V}, V_{GS} = 10\text{ V}$		0.40		A
Drain-Source On-State Resistance ¹	$r_{DS(ON)}$	$V_{GS} = 10\text{ V}, I_D = 0.3\text{ A}$	2.2		3.0	Ω
		$V_{GS} = 10\text{ V}, I_D = 0.3\text{ A}, T_J = 125^\circ\text{C}$	4.0		5.4	
Forward Transconductance ¹	g_{fs}	$V_{DS} = 15\text{ V}, I_D = 0.3\text{ A}$	0.6	0.3		S
DYNAMIC						
Input Capacitance	C_{iss}	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		180	300	pF
Output Capacitance	C_{oss}			70	100	
Reverse Transfer Capacitance	C_{rss}			25	35	
Total Gate Charge ²	Q_g	$V_{DS} = 0.8 \times V_{(BR)DSS}, V_{GS} = 10\text{ V}, I_D = 0.40\text{ A}$		5.0	11	nC
Gate-Source Charge ²	Q_{gs}			0.8		
Gate-Drain Charge ²	Q_{gd}			3		
Turn-On Delay Time ²	$t_{d(on)}$	$V_{DD} = 100\text{ V}, R_L = 330\ \Omega$ $I_D \approx 0.3\text{ A}, V_{GEN} = 10\text{ V}, R_G = 25\ \Omega$		7.5	15	ns
Rise Time ²	t_r			13	25	
Turn-Off Delay Time ²	$t_{d(off)}$			45	60	
Fall Time ²	t_f			28	45	
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ($T_A = 25^\circ\text{C}$)						
Continuous Current	I_S				0.4	A
Pulsed Current ³	I_{SM}				1.6	
Forward Voltage ¹	V_{SD}	$I_F = I_S, V_{GS} = 0\text{ V}$			5.8	V
Reverse Recovery Time	t_{rr}	$I_F = I_S, dI_F/dt = 100\text{ A}/\mu\text{s}$	100			ns
Reverse Recovery Charge	Q_{rr}		0.36			

¹Pulse test: Pulse Width $\leq 300\ \mu\text{sec}$, Duty Cycle $\leq 2\%$.

²Independent of operating temperature.

³Pulse width limited by maximum junction temperature.

TYPICAL CHARACTERISTICS (25°C Unless Otherwise Specified)

Figure 1. Output Characteristics

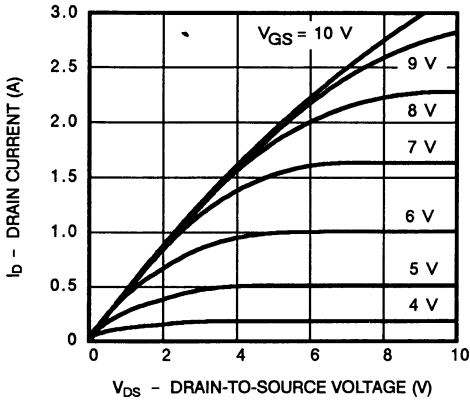


Figure 2. Transfer Characteristics

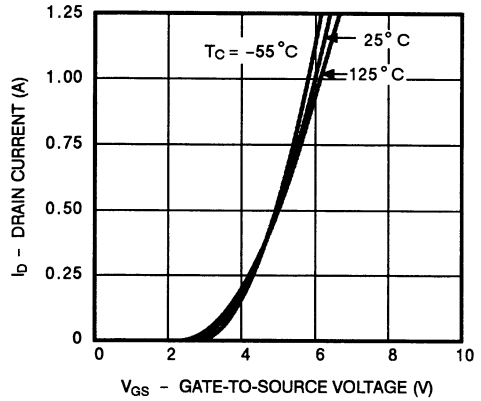


Figure 3. Transconductance

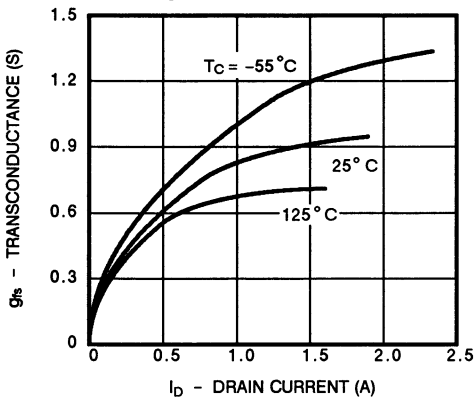


Figure 4. On-Resistance

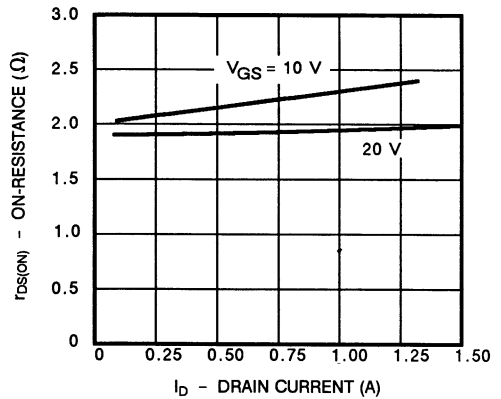


Figure 5. Capacitance

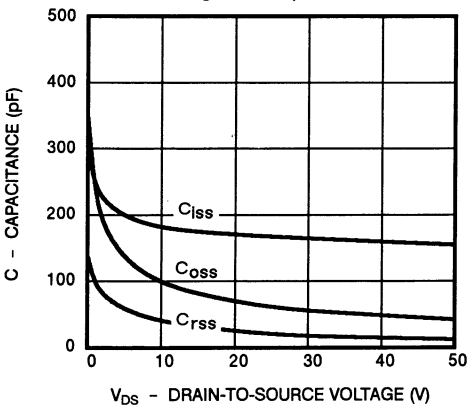
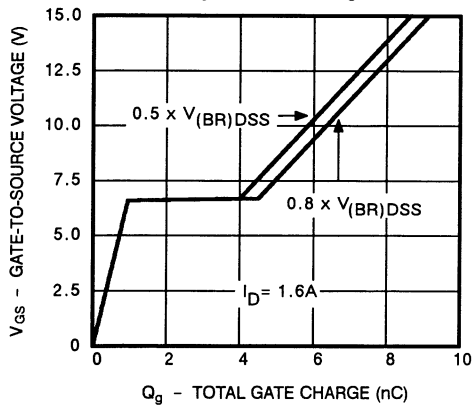


Figure 6. Gate Charge



TYPICAL CHARACTERISTICS (Cont'd)

Figure 7. On-Resistance vs. Junction Temperature

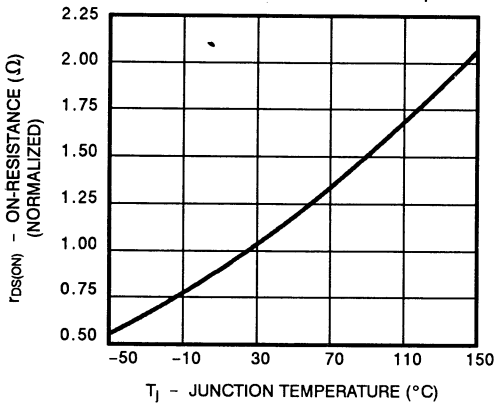
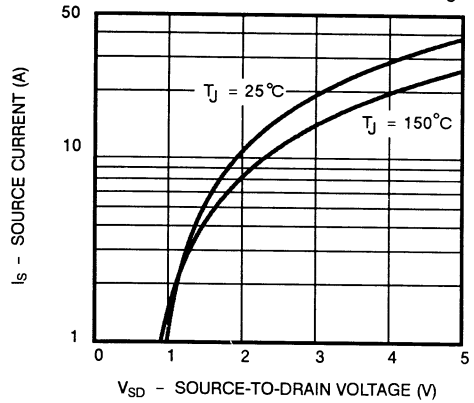


Figure 8. Source-Drain Diode Forward Voltage



THERMAL RATINGS

Figure 9. Maximum Drain Current vs. Ambient Temperature

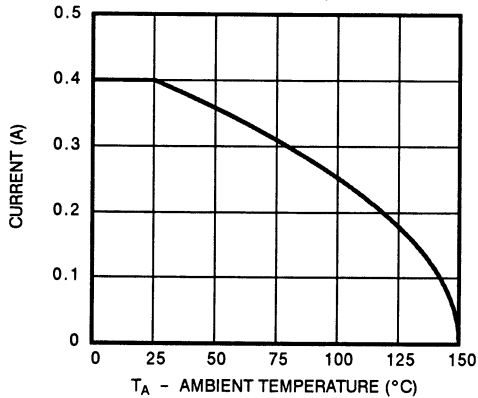
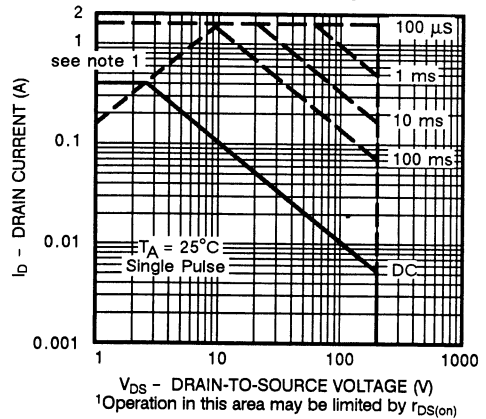


Figure 10. Safe Operating Area



¹Operation in this area may be limited by r_{DS(on)}