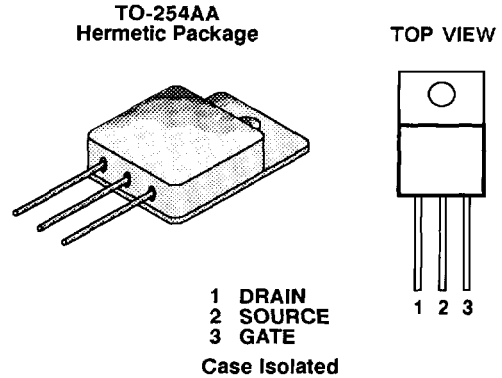


## PRODUCT SUMMARY

$V_{(BR)DSS}$ (V)	$r_{DS(ON)}$ ( $\Omega$ )	$I_D$ (A)
500	0.85	7.0



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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		$V_{DS}$	500	V
Gate-Source Voltage		$V_{GS}$	$\pm 20$	
Continuous Drain Current	$T_C = 25^\circ\text{C}$	$I_D$	7.0	A
	$T_C = 100^\circ\text{C}$		4.5	
Pulsed Drain Current <sup>1</sup>		$I_{DM}$	28	
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		

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

ELECTRICAL CHARACTERISTICS (T <sub>J</sub> = 25°C Unless Otherwise Noted)						
PARAMETER	SYMBOL	TEST CONDITIONS	TYP	LIMITS		UNIT
				MIN	MAX	
<b>STATIC</b>						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0 V, I <sub>D</sub> = 250 μA		500		V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250 μA		2.0	4.0	
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 400 V, V <sub>GS</sub> = 0 V			25	μA
		V <sub>DS</sub> = 400 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 125°C			250	
On-State Drain Current <sup>1</sup>	I <sub>D(ON)</sub>	V <sub>DS</sub> = 10 V, V <sub>GS</sub> = 10 V		7.0		A
Drain-Source On-State Resistance <sup>1</sup>	r <sub>DS(ON)</sub>	V <sub>GS</sub> = 10 V, I <sub>D</sub> = 4.5 A	0.8		0.85	Ω
		V <sub>GS</sub> = 10 V, I <sub>D</sub> = 4.5 A, T <sub>J</sub> = 125°C	1.40		1.62	
Forward Transconductance <sup>1</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 15 V, I <sub>D</sub> = 4.5 A	4.3	4.0	12	S
<b>DYNAMIC</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> = 0 V, V <sub>DS</sub> = 25 V, f = 1 MHz	1500			pF
Output Capacitance	C <sub>oss</sub>		250			
Reverse Transfer Capacitance	C <sub>rss</sub>		75			
Total Gate Charge <sup>2</sup>	Q <sub>g</sub>	V <sub>DS</sub> = 0.5 × V <sub>(BR)DSS</sub> , V <sub>GS</sub> = 10 V, I <sub>D</sub> = 7 A	54	30	77	nC
Gate-Source Charge <sup>2</sup>	Q <sub>gs</sub>		10	4.6	13	
Gate-Drain Charge <sup>2</sup>	Q <sub>gd</sub>		26	13	35	
Turn-On Delay Time <sup>2</sup>	t <sub>d(on)</sub>	V <sub>DD</sub> = 250 V, R <sub>L</sub> = 36 Ω I <sub>D</sub> ≈ 7 A, V <sub>GEN</sub> = 10 V, R <sub>G</sub> = 4.7 Ω	15		40	ns
Rise Time <sup>2</sup>	t <sub>r</sub>		20		50	
Turn-Off Delay Time <sup>2</sup>	t <sub>d(off)</sub>		50		110	
Fall Time <sup>2</sup>	t <sub>f</sub>		18		50	
<b>SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Continuous Current	I <sub>S</sub>				7.0	A
Pulsed Current <sup>3</sup>	I <sub>SM</sub>				28	
Forward Voltage <sup>1</sup>	V <sub>SD</sub>	I <sub>F</sub> = I <sub>S</sub> , V <sub>GS</sub> = 0 V		0.6	2.0	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = I <sub>S</sub> , dI <sub>F</sub> /dt = 100 A/μs	250		500	ns
Reverse Recovery Charge	Q <sub>rr</sub>		1.0			μC

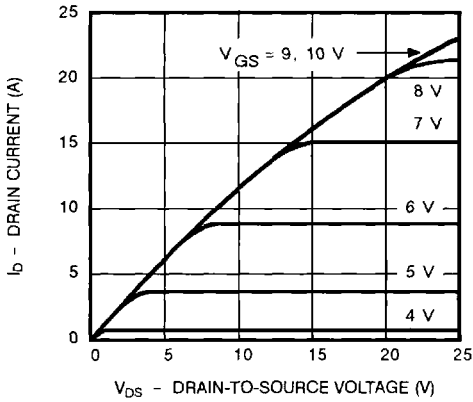
<sup>1</sup>Pulse test: Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

<sup>2</sup>Independent of operating temperature.

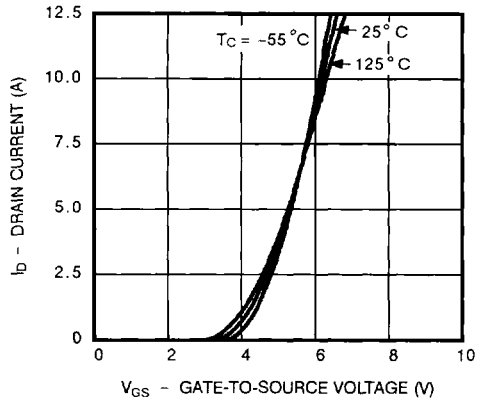
<sup>3</sup>Pulse width limited by maximum junction temperature (refer to transient thermal impedance data, Figure 11).

TYPICAL CHARACTERISTICS (25°C Unless Otherwise Specified)

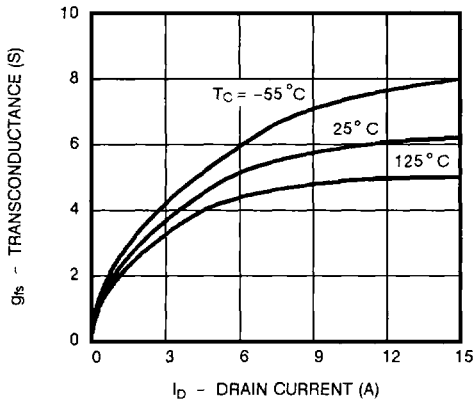
**Figure 1. Output Characteristics**



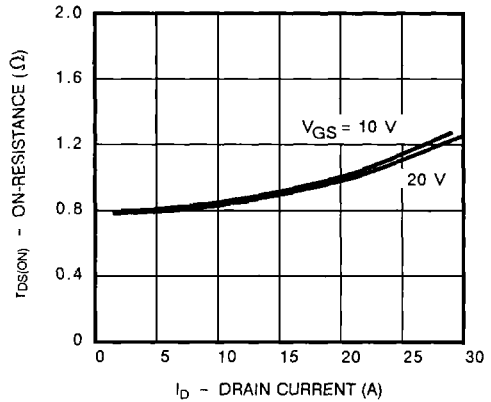
**Figure 2. Transfer Characteristics**



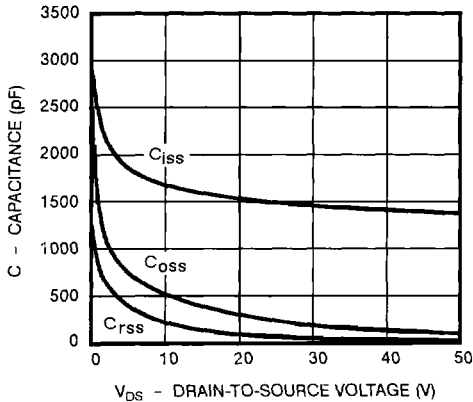
**Figure 3. Transconductance**



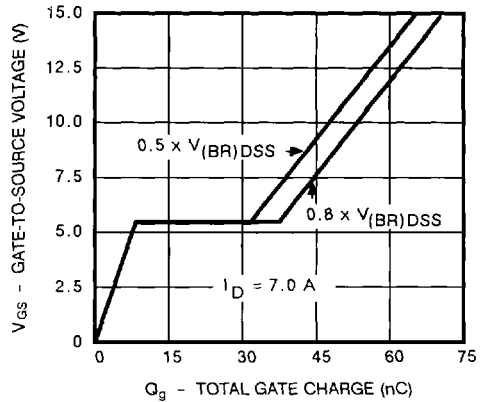
**Figure 4. On-Resistance**



**Figure 5. Capacitance**

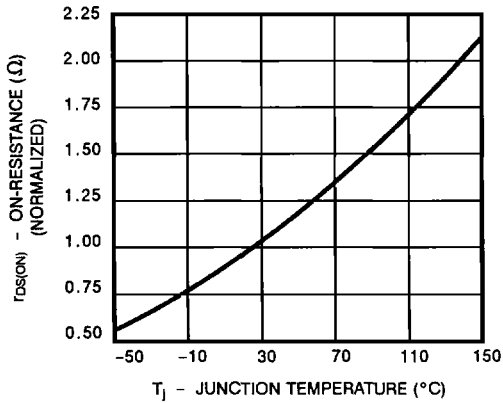


**Figure 6. Gate Charge**

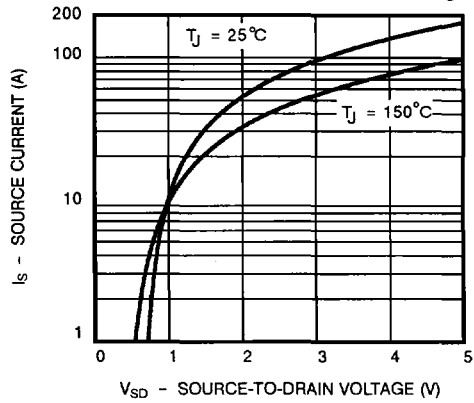


## TYPICAL CHARACTERISTICS (Cont'd)

**Figure 7. On-Resistance vs. Junction Temperature**

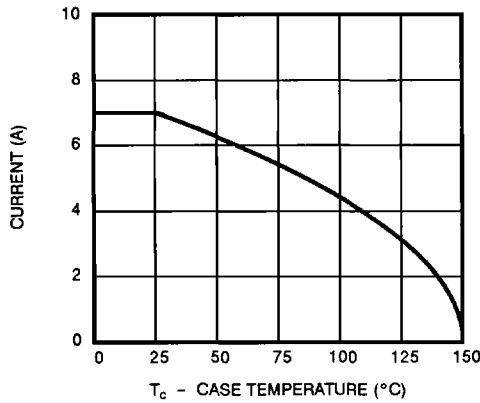


**Figure 8. Source-Drain Diode Forward Voltage**

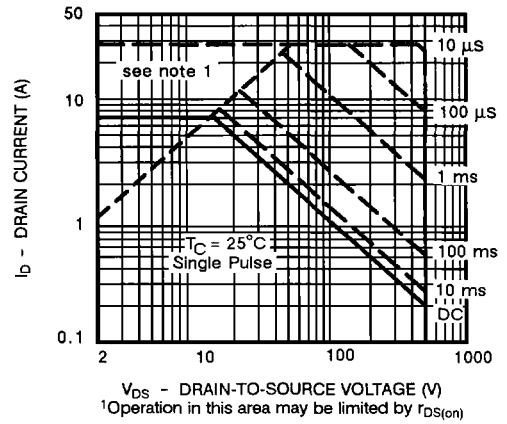


## THERMAL RATINGS

**Figure 9. Maximum Drain Current vs. Case Temperature**



**Figure 10. Safe Operating Area**



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

