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## NTE2384 MOSFET N-Channel Enhancement Mode, High Speed Switch TO3 Type Package

### Absolute Maximum Ratings:

Drain-Source Voltage ( $T_J = +25^\circ$ to $+150^\circ\text{C}$ ), $V_{DSS}$ .....	900V
Drain-Gate Voltage ( $T_J = +25^\circ$ to $+150^\circ\text{C}$ , $R_{GS} = 1M\pm$ ), $V_{DGR}$ .....	900V
Gate-Source Voltage, $V_{GS}$	
Continuous .....	$\pm 20\text{V}$
Transient .....	$\pm 30\text{V}$
Drain Current ( $T_C = +25^\circ\text{C}$ ), $I_D$	
Continuous .....	6A
Pulsed ( $T_{JM} = +150^\circ\text{C}$ ) .....	24A
Total Dissipation ( $T_C = +25^\circ\text{C}$ ), $P_{tot}$ .....	180W
Operating Junction Temperature Range, $T_J$ .....	$-55^\circ$ to $+150^\circ\text{C}$
Maximum Operating Junction Temperature, $T_{JM}$ .....	$+150^\circ\text{C}$
Storage Temperature Range, $T_{stg}$ .....	$-55^\circ$ to $+150^\circ\text{C}$
Maximum Thermal Resistance, Junction-to-Case, $R_{thJC}$ .....	0.7K/W
Typical Thermal Resistance, Junction-to-Ambient, $R_{thJA}$ .....	0.25K/W
Lead Temperature (During Soldering, 1.6mm from Case, 10sec), $T_L$ .....	$+300^\circ\text{C}$

### Electrical Characteristics: ( $T_J = +25^\circ\text{C}$ unless otherwise specified)

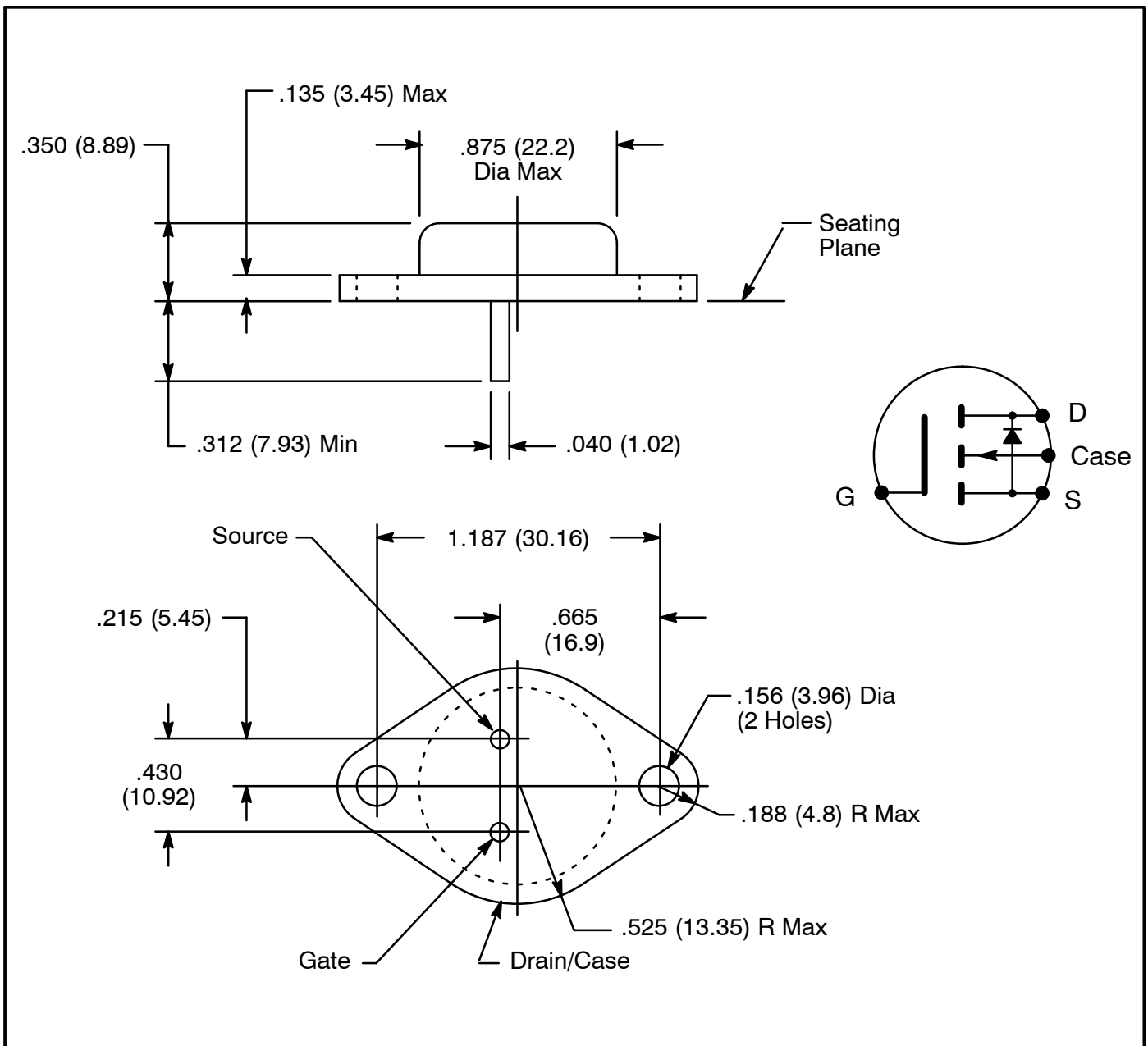
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 3\text{mA}$ , $V_{GS} = 0$	900	-	-	V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{GS} = 0$ , $V_{DS} = 640\text{V}$ , $T_J = +25^\circ\text{C}$	-	-	250	$\leq \text{A}$
		$V_{GS} = 0$ , $V_{DS} = 640\text{V}$ , $T_J = +125^\circ\text{C}$	-	-	1.0	mA
Gate-Body Leakage Current	$I_{GSS}$	$V_{DS} = 0$ , $V_{GS} = \pm 20\text{V}$	-	-	$\pm 100$	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$ , $I_D = 250\leq \text{A}$	2.0	-	4.5	V
Static Drain-Source On Resistance	$R_{DS(on)}$	$V_{GS} = 10\text{V}$ , $I_D = 3\text{A}$ , Note 1	-	-	1.4	$\pm$
<b>Dynamic Characteristics</b>						
Forward Transconductance	$g_{fs}$	$V_{DS} = 10\text{V}$ , $I_D = 3\text{A}$ , Pulse Test	4	6	-	S
Input Capacitance	$C_{iss}$	$V_{DS} = 25\text{V}$ , $V_{GS} = 0$ , $f = 1\text{MHz}$	-	2600	-	pf
Output Capacitance	$C_{oss}$		-	180	-	pf
Reverse Transfer Capacitance	$C_{rss}$		-	45	-	pf
Turn-On Time	$t_{d(on)}$		$V_{GS} = 10\text{V}$ , $V_{DS} = 450\text{V}$ , $I_D = 3\text{A}$ , $R_G = 4.7\pm$ (External)	-	35	100
Rise Time	$t_r$	-		40	110	ns
Turn-Off Delay Time	$t_{d(off)}$	-		100	200	ns
Fall Time	$t_f$	-		60	100	ns

Note 1. Pulse test,  $t \leq 300\leq \text{s}$ , duty cycle  $d \leq 2\%$ .

**Electrical Characteristics (Cont'd):** ( $T_J = +25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Dynamic Characteristics (Cont'd)</b>						
Total Gate Charge	$Q_{g(on)}$	$V_{GS} = 10\text{V}, V_{DS} = 450\text{V}, I_D = 3\text{A}$	-	88	130	nC
Gate-Source Charge	$Q_{gs}$		-	21	30	nC
Gate-Drain Charge	$Q_{gd}$		-	38	70	nC
<b>Source-Drain Diode Ratings and Characteristics</b>						
Continuous Reverse Drain Current	$I_{DR}$	$V_{GS} = 0$	-	-	6	A
Pulsed Reverse Drain Current	$I_{DRM}$	$T_{JM} = +150^\circ\text{C}$	-	-	24	A
Diode Forward Voltage	$V_{SD}$	$I_F = I_{DR}, V_{GS} = 0$ , Note 1	-	-	1.5	V
Reverse Recovery Time	$t_{rr}$	$I_F = I_{DR}, -di/dt = 100\text{A}/\mu\text{s}, V_R = 100\text{V}$	-	900	-	ns

Note 1. Pulse test,  $t \leq 300\mu\text{s}$ , duty cycle  $d \leq 2\%$ .



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