

## NTE2971 MOSFET N-Channel, Enhancement Mode High Speed Switch

### **Applications:**

- SMPS
- DC-DC Converter
- Battery Charger
- Power Supply of Printer
- Copier
- HDD, FDD, TV, VCR
- Personal Computer

### **Absolute Maximum Ratings:** ( $T_C = +25^\circ\text{C}$ unless otherwise specified)

Drain-Source Voltage ( $V_{GS} = 0V$ ), $V_{DSS}$ .....	600V
Gate-Source Voltage ( $V_{DS} = 0V$ ), $V_{GS}$ .....	$\pm 30V$
Drain Current, $I_D$	
Continuous .....	20A
Pulsed .....	60A
Maximum Power Dissipation, $P_D$ .....	275W
Channel Temperature Range, $T_{ch}$ .....	$-55^\circ$ to $+150^\circ\text{C}$
Storage Temperature Range, $T_{stg}$ .....	$-55^\circ$ to $+150^\circ\text{C}$
Thermal Resistance, Channel-to-Case, $R_{th(ch-c)}$ .....	$0.45^\circ\text{C/W}$

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{DS} = 0V$ , $I_D = 1mA$	600	—	—	V
Gate-Source Breakdown Voltage	$V_{(BR)GSS}$	$V_{DS} = 0V$ , $I_G = \pm 100\mu A$	$\pm 30$	—	—	V
Gate-Source Leakage	$I_{GSS}$	$V_{GS} = \pm 25V$ , $V_{DS} = 0V$	—	—	$\pm 10$	$\mu A$
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 600V$ , $V_{GS} = 0$	—	—	1.0	mA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = 10V$ , $I_D = 1mA$	2.0	3.0	4.0	V
Static Drain-Source ON Resistance	$R_{DS(on)}$	$V_{GS} = 10V$ , $I_D = 10A$	—	0.33	0.43	$\Omega$
Drain-Source On-State Voltage	$V_{DS(on)}$	$V_{GS} = 10V$ , $I_D = 10A$	—	3.3	4.3	V
Forward Transfer Admittance	$ y_{fs} $	$V_{GS} = 10V$ , $I_D = 10A$	8	13	—	S

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Capacitance	$C_{iss}$	$V_{GS} = 0\text{V}, V_{DS} = 25\text{V}, f = 1\text{MHz}$	–	2800	–	pF
Output Capacitance	$C_{oss}$		–	350	–	pF
Reverse Transfer Capacitance	$C_{rss}$		–	50	–	pF
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 200\text{V}, I_D = 10\text{A}, V_{GS} = 10\text{V},$ $R_{GEN} = R_{GS} = 50\Omega$	–	50	–	ns
Rise Time	$t_r$		–	85	–	ns
Turn-Off Delay Time	$t_{d(off)}$		–	350	–	ns
Fall Time	$t_f$		–	100	–	ns
Diode Forward Voltage	$V_{SD}$	$I_S = 10\text{A}, V_{GS} = 0\text{V}$	–	1.5	2.0	V

