NTE ELECTRONICS, INC.

NTE2379
MOSFET
N–Channel, Enhancement Mode
High Speed Switch

Features:

- Dynamic dv/dt Rating
- Repetitive Avalanche Rated
- Fast Switching
- Ease of Paralleling
- Simple Drive Requirements

Absolute Maximum Ratings:

Gate–Source Voltage, V_{GS} . . . . . ±20V

Drain Current, I_D

Continuous (V_{GS} = 10V)

T_C = +25°C 6.2A

T_C = +100°C 3.9A

Pulsed (Note 1) 25A

Gate Current (Pulsed), I_{GM} . . . . . ±1.5A

Single Pulsed Avalanche Energy (Note 2), E_{AS} 570mJ

Avalanche Current (Note 1), I_{AR} 6.2A

Repetitive Avalanche Energy (Note 1), E_{AR} 13mJ

Peak Diode Recovery dv/dt (Note 3), dv/dt 3V/ns

Total Power Dissipation (T_C = +25°C), P_D 125W

Derate Above 25°C . . . . . 1.0W/°C

Operating Junction Temperature Range, T_J . . . . . –55° to +150°C

Storage Temperature Range, T_{stg} . . . . . –55° to +150°C

Maximum Lead Temperature (During Soldering, 1/16” from case, 10sec), T_L . . . . . +300°C

Thermal Resistance:

Maximum Junction–to–Case, R_{thJC} . . . . . 1.0°C/W

Typical Case–to–Sink (Mounting surface flat, smooth, and greased), R_{thCS} . . . . . 0.5°C/W

Maximum Junction–to–Ambient (Free Air Operation), R_{thJA} . . . . . 62°C/W

Note 1. Repetitive Rating: Pulse width limited by maximum junction temperature.

Note 2. V_{DD} = 50V, starting T_J = +25°C, l = 27mH, R_G = 25Ω, I_{AS} = 6.2A.

Note 3. $I_{SD} \le 6.2A$, di/dt ≤ 80A/μA, $V_{DD} \le V_{(BR)DSS}$, $T_J \le +150°C$.

Electrical Characteristics: (T_J = +25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain–Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V, I_D = 250µA	600	–	–	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250µA	2.0	–	4.0	V
Gate–Source Leakage Forward	I_{GSS}	V_{GS} = 20V	–	–	100	nA
Gate–Source Leakage Reverse	I_{GSS}	V_{GS} = –20V	–	–	–100	nA
Drain–Source Leakage Current	I_{DSS}	V_{DS} = 600V, V_{GS} = 0	–	–	100	µA
		V_{DS} = 480V, V_{GS} = 0, T_C = +150°C	–	–	500	µA
Static Drain–Source ON Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 3.7A, Note 4	–	–	1.2	Ω
Forward Transconductance	g_{fs}	V_{DS} ≥ 100V, I_D = 3.7A, Note 4	4.7	–	–	mhos
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz	–	1300	–	pF
Output Capacitance	C_{oss}		–	160	–	pF
Reverse Transfer Capacitance	C_{rss}		–	30	–	pF
Turn–On Delay Time	$t_{d(on)}$	V_{DD} = 300V, I_D = 6.2A, R_G = 9.1Ω, R_D = 47Ω, Note 4	–	32	–	ns
Rise Time	t_r		–	18	–	ns
Turn–Off Delay Time	$t_{d(off)}$		–	55	–	ns
Fall Time	t_f		–	20	–	ns
Total Gate Charge	Q_g	V_{GS} = 10V, I_D = 6.2A, V_{DS} = 360V	–	–	60	nC
Gate–Source Charge	Q_{gs}		–	–	8.3	nC
Gate–Drain (“Miller”) Charge	Q_{gd}		–	–	30	nC
Internal Drain Inductance	L_D	Between lead, 6mm (.250 in) from package and center of die contact	–	4.5	–	nH
Internal Source Inductance	L_S		–	7.5	–	nH
Source–Drain Diode Ratings and Characteristics						
Continuous Source Current	I_S	(Body Diode)	–	–	6.2	A
Pulse Source Current	I_{SM}	(Body Diode) Note 1	–	–	25	A
Diode Forward Voltage	V_{SD}	T_J = +25°C, I_S = 6.2A, V_{GS} = 0V, Note 4	–	–	1.5	V
Reverse Recovery Time	t_{rr}	T_J = +25°C, I_F = 6.2A, di/dt = 100A/µs, Note 4	–	450	940	ns
Reverse Recovery Charge	Q_{rr}		–	3.8	7.9	µC
Forward Turn–On Time	t_{on}	Intrinsic turn–on time is neglegible (turn–on is dominated by L_S + L_D)				

Note 1. Repetitive Rating: Pulse width limited by maximum junction temperature.
Note 4. Pulse Test: Pulse Width ≤ 300µs, Duty Cycle ≤ 2%.