

N Channel MOSFET

M04N60

4.0A



TO-220

- Robust High Voltage Termination
- Avalanche Energy Specified
- Source-to-Drain Diode Recovery Time Comparable to a Discrete Fast Recovery Diode

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS (Ta=25)

PARAMETERS	SYMBOL	MIN	TYP	MAX	UNITS	CONDITION
Continuous Drain Current	I_D			3.6	A	$V_{GS} = 10\text{ V}, T_a = 25$
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	600			V	$V_{GS} = 0\text{ V}, I_D = 250\ \mu\text{ A}$
Drain-Source Leakage Current	I_{DSS}			0.1 0.5	mA	$V_{DS} = 600\text{ V}, V_{GS} = 0\text{ V}$ $V_{DS} = 480\text{ V}, V_{GS} = 0\text{ V}, T_J = 125$
Gate-Source Leakage Current-Forward	I_{GSSF}			100	nA	$V_{gsf} = 20\text{ V}, V_{DS} = 0\text{ V}$
Gate-Source Leakage Current-Reverse	I_{GSSR}			100	nA	$V_{gsr} = 20\text{ V}, V_{DS} = 0\text{ V}$
Gate Threshold Voltage	$V_{GS(th)}$	2.0		4.0	V	$V_{DS} = V_{GS}, I_D = 250\ \mu\text{ A}$
Static Drain-Source On-Resistance	$R_{DS(on)}$			2.2	Ω	$V_{GS} = 10\text{ V}, I_D = 2.2\text{ A}^*$
Forward Transconductance	g_{FS}	2.5			S	$V_{DS} = 50\text{ V}, I_D = 2.2\text{ A}^*$
Input Capacitance	C_{iss}		660		pF	$V_{DS} = 25\text{ V}, V_{GS} = 0\text{ V}, f = 1.0\text{ MHz}$
Output Capacitance	C_{oss}		86		pF	
Reverse Transfer Capacitance	C_{rss}		19		pF	
Turn-On Delay Time	$t_{d(on)}$		11		ns	$V_{DD} = 300\text{ V}, I_D = 3.6\text{ A}, V_{GS} = 10\text{ V}, R_G = 12\Omega^*$
Rise Time	t_r		13		ns	
Turn-Off Delay Time	$t_{d(off)}$		35		ns	
Fall Time	t_f		14		ns	
Total Gate Charge	Q_g			31	nC	$V_{DS} = 360\text{ V}, I_D = 3.6\text{ A}, V_{GS} = 10\text{ V}^*$
Gate-Source Charge	Q_{gs}			4.6	nC	
Gate-Drain Charge	Q_{gd}			17	nC	
Internal Drain Inductance	L_D		4.5		nH	Measured from the drain lead 0.25" from package to center of die
Internal Drain Inductance	L_S		7.5		nH	Measured from the source lead 0.25" from package to source bond pad
Total Power Disipation	P_D			74	W	
Thermal Resistance – Junction to Case	θ_{JC}			1.7	/W	
Operating and Storage Temperature	T_J, T_{STG}	-55		150		
SOURCE-DRAIN DIODE CHARACTERISTICS						
Forward On-Voltage(1)	V_{SD}			1.6	V	$I_S = 3.6\text{ A}, V_{GS} = 0\text{ V}, d_{is}/d_t = 100\text{ A}/\mu\text{s}$
Forward Turn-On Time	t_{on}		**		ns	
Reverse Recovery Time	t_{rr}		370		ns	

* Pulse Test: Pulse Width 300 μs , Duty Cycle 2%

** Negligible, Dominated by circuit inductance



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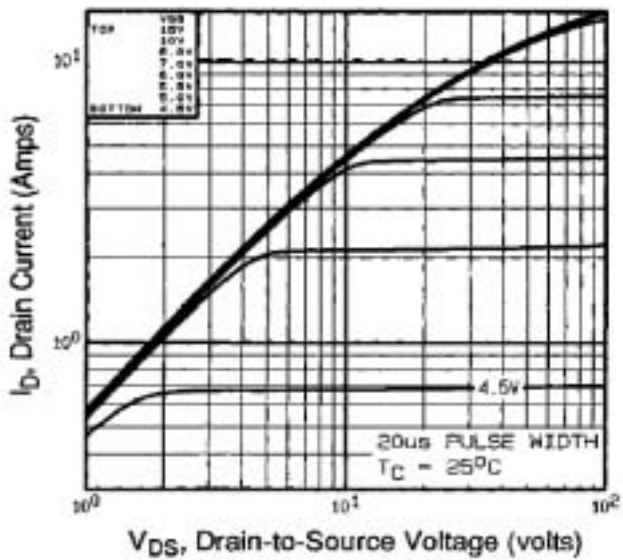


Fig 1. Typical Output Characteristics,
 $T_C=25^{\circ}\text{C}$

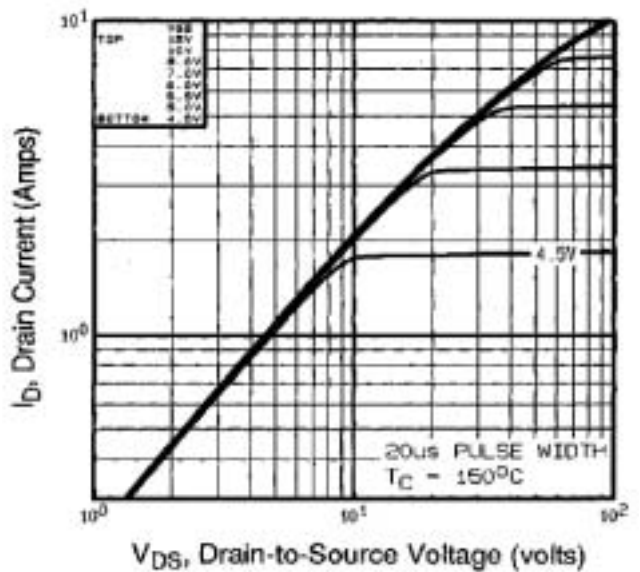


Fig 2. Typical Output Characteristics,
 $T_C=150^{\circ}\text{C}$

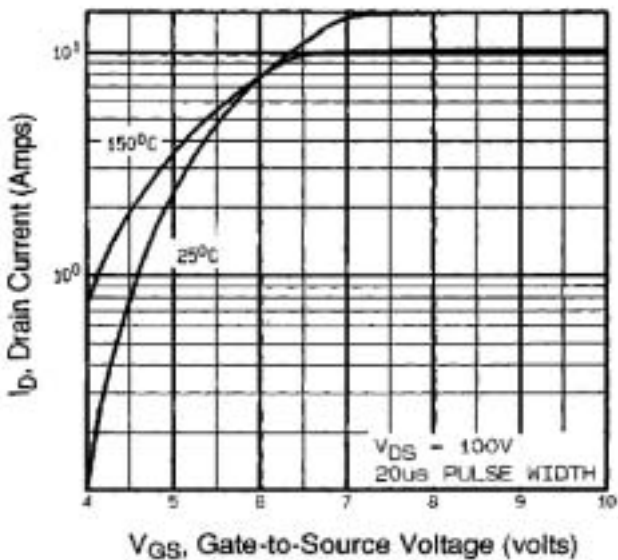


Fig 3. Typical Transfer Characteristics

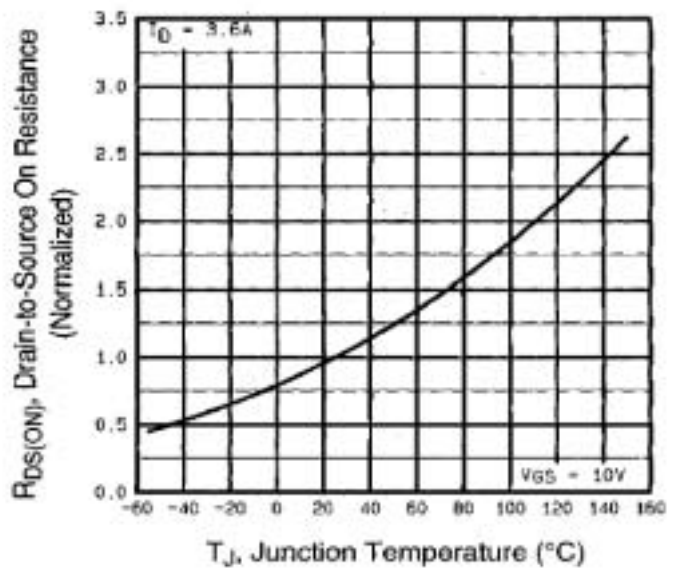


Fig 4. Normalized On-Resistance
Vs. Temperature



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