

TO-252-2L Plastic-Encapsulate MOSFET

40V N-Channel MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
40V	6.5m Ω @10V	55A
	8.2m Ω @4.5V	

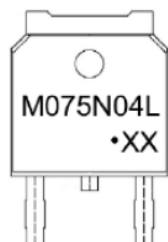
Feature

- Trench Technology Power MOSFET
- Low $R_{DS(ON)}$
- Low Gate Charge
- Low Gate Resistance
- 100% UIS Tested

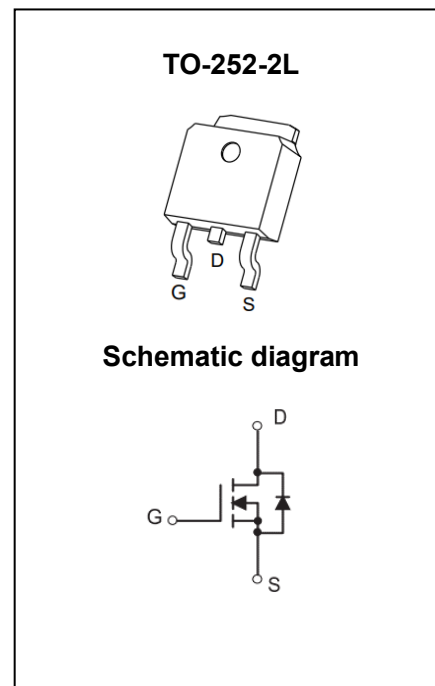
Application

- Power Switching Application

MARKING:



M075N04L = Device Code
 XX = Date Code
 Solid Dot = Green Indicator



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit	
Drain - Source Voltage	V_{DS}	40	V	
Gate - Source Voltage	V_{GS}	± 20	V	
Continuous Drain Current ¹	$T_C = 25^\circ\text{C}$	I_D	55	A
	$T_C = 100^\circ\text{C}$	I_D	41	A
Pulsed Drain Current ²	I_{DM}	220	A	
Single Pulsed Avalanche Current ³	I_{AS}	27	A	
Single Pulsed Avalanche Energy ³	E_{AS}	182	mJ	
Power Dissipation ⁵	$T_C = 25^\circ\text{C}$	P_D	41.5	W
Thermal Resistance from Junction to Ambient ⁶	$R_{\theta JA}$	55	$^\circ\text{C/W}$	
Thermal Resistance from Junction to Case	$R_{\theta JC}$	3	$^\circ\text{C/W}$	
Junction Temperature	T_J	150	$^\circ\text{C}$	
Storage Temperature	T_{STG}	-55~ +150	$^\circ\text{C}$	

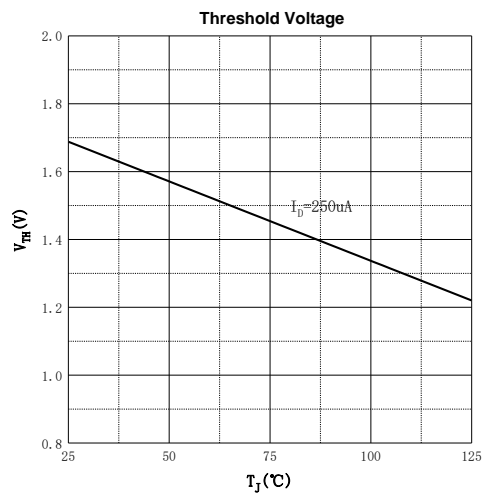
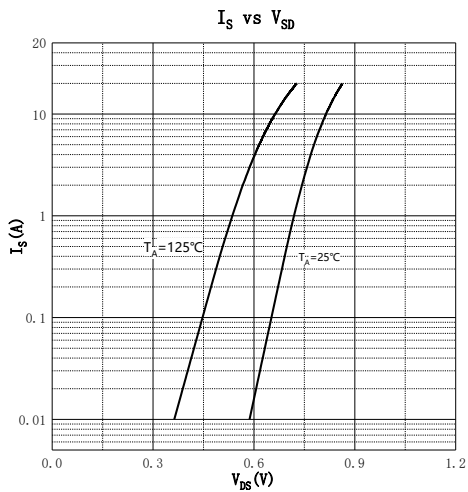
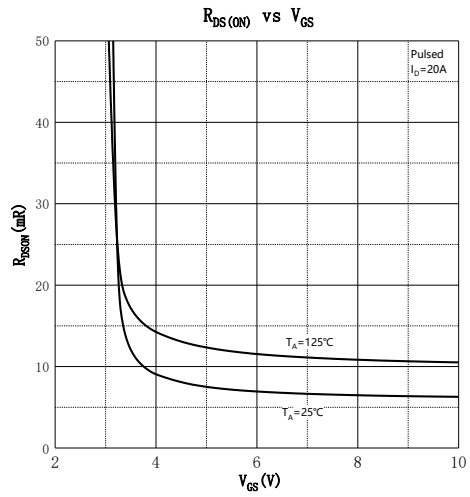
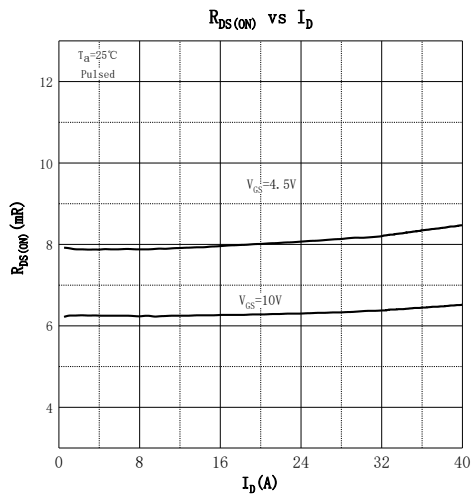
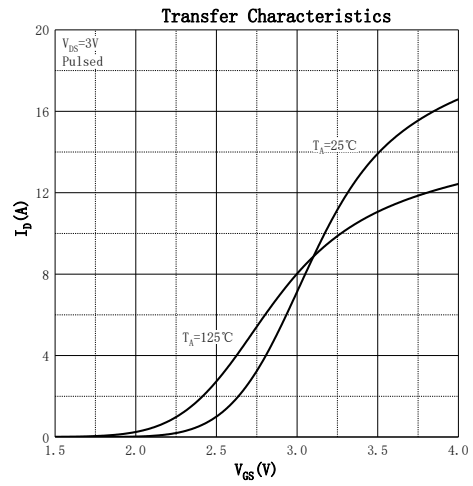
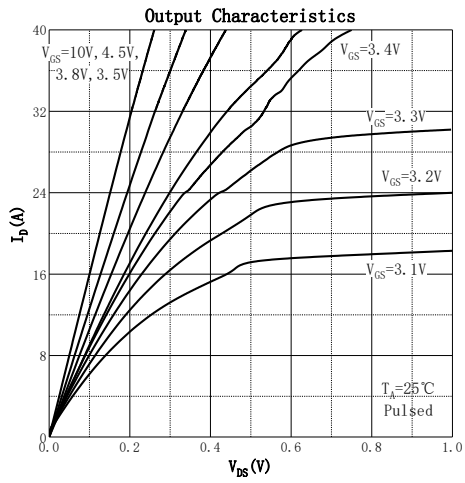
Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain - Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	40			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 32V, V_{GS} = 0V$			1	μA
Gate - Body Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
On Characteristics⁴						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1	1.7	3	V
Drain-source On-resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 20A$		6.5	8.5	m Ω
		$V_{GS} = 4.5V, I_D = 10A$		8.2	12	
Forward Transconductance	g_{FS}	$V_{DS} = 10V, I_D = 10A$				S
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS} = 20V, V_{GS} = 0V, f = 1MHz$		2896		pF
Output Capacitance	C_{oss}			190		
Reverse Transfer Capacitance	C_{rss}			157		
Gate Resistance	R_g	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$		2		Ω
Switching Characteristics						
Total Gate Charge	Q_g	$V_{DS} = 30V, V_{GS} = 10V, I_D = 20A$		51		nC
Gate-source Charge	Q_{gs}			9		
Gate-drain Charge	Q_{gd}			7.7		
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = 30V, V_{GS} = 10V, R_L = 1.5\Omega$ $R_G = 3\Omega$		9		ns
Turn-on Rise Time	t_r			22		
Turn-off Delay Time	$t_{d(off)}$			45		
Turn-off Fall Time	t_f			22		
Source - Drain Diode Characteristics						
Diode Forward Voltage ⁴	V_{SD}	$V_{GS} = 0V, I_S = 10A$			1.2	V

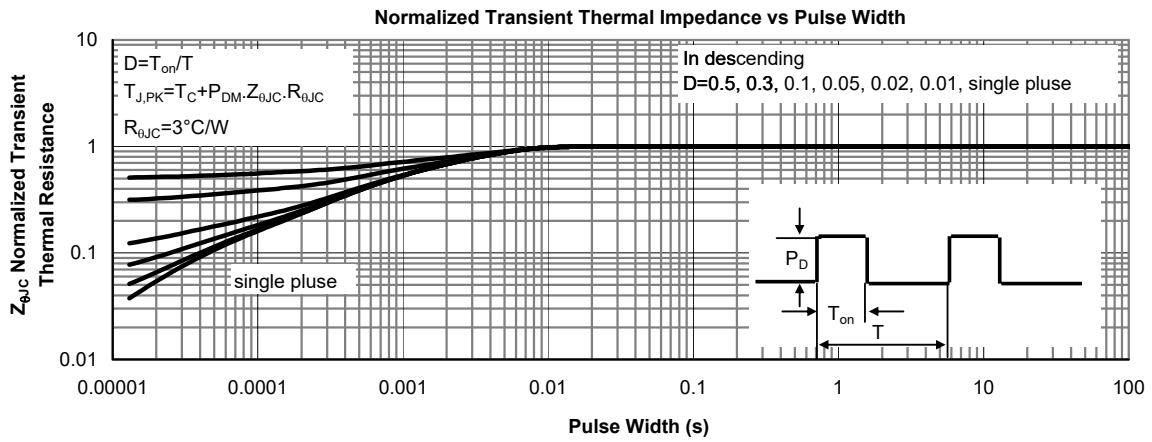
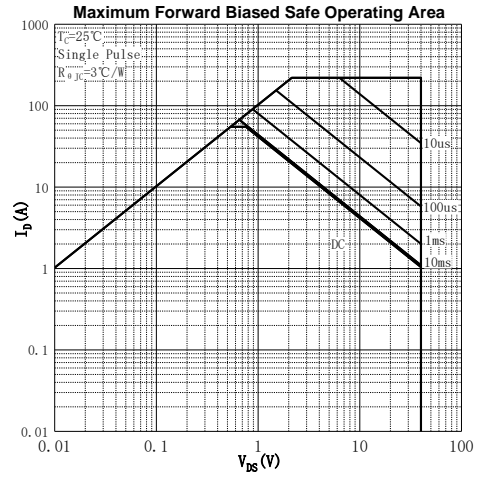
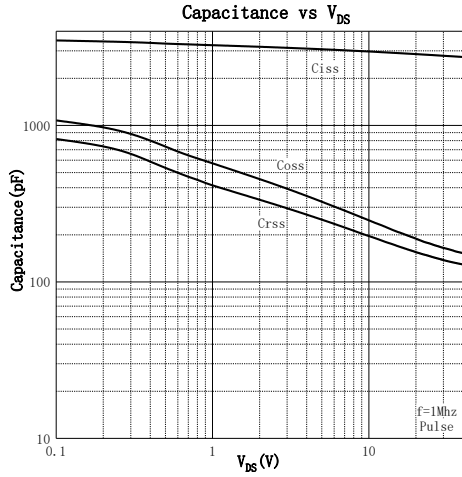
Notes :

- 1.The maximum current rating is limited by package.And device mounted on a large heatsink
- 2.Pulse Test : Pulse Width $\leq 10\mu s$, duty cycle $\leq 1\%$.
- 3.EAS condition: $V_{DD} = 20V, V_{GS} = 10V, L = 0.5mH, R_G = 25\Omega$ Starting $T_J = 25^\circ\text{C}$.
- 4.Pulse Test : Pulse Width $\leq 300\mu s$, duty cycle $\leq 2\%$.
- 5.The power dissipation P_D is limited by $T_{J(MAX)} = 150^\circ\text{C}$.And device mounted on a large heatsink
- 6.Device mounted on $1in^2$ FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$.

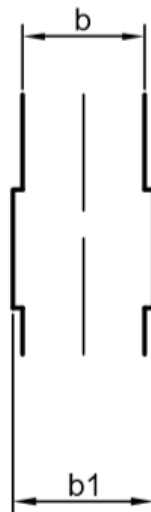
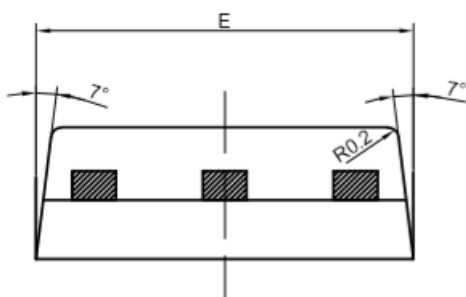
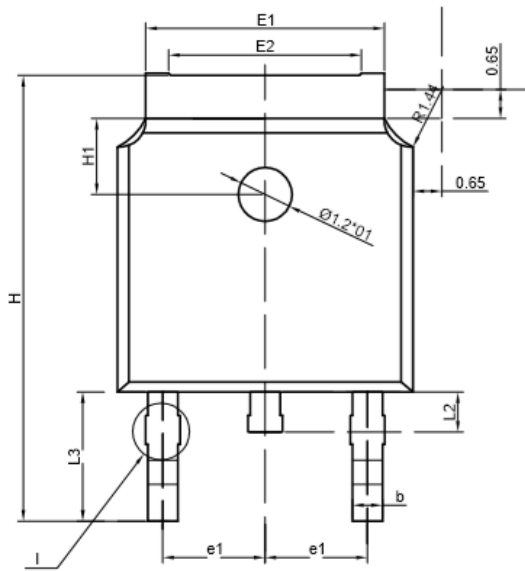
Typical Characteristics



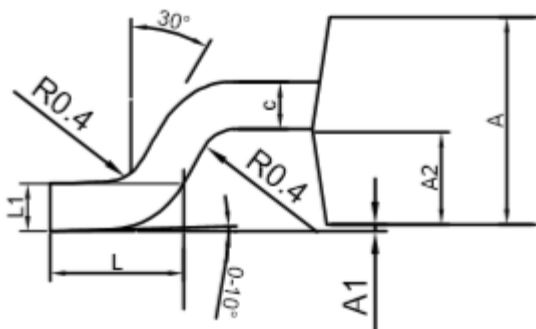
Typical Characteristics



TO-252-2L Package Outline Dimensions



DETAIL I



SYMBOL	MIN	NOM	MAX
A	2.29	2.30	2.31
A1	0.00	0.07	0.15
A2	1.020	1.025	1.030
b	0.645	0.670	0.695
b1	0.67	0.77	0.87
c	0.523	0.528	0.533
c1	0.498	0.508	0.518
D	6.09	6.10	6.11
D1	5.244	5.249	5.254
E	6.50	6.60	6.70
E1	5.284	5.334	5.384
E2	4.284	4.334	4.312
e	4.821	4.826	4.831
e1	2.281	2.286	2.291
e2	4.059	4.064	4.069
H	9.8	10.0	10.2
H1	1.5	1.6	1.7
h	1.316	1.321	1.326
h1	0.757	0.762	0.767
L	1.4	1.5	1.6
L1	0.50	0.51	0.52
L2	0.8	0.9	1.0
L3	2.88	2.888	2.893

NOTICE

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