

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
30V	1.7m Ω @10V	150A
	2.1m Ω @4.5V	

Feature

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

Application

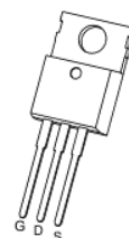
- Power Switching Application

MARKING:

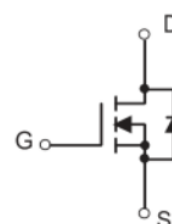


M017N03L = Device Code
XX = Date Code
Solid Dot = Green Indicator

TO-220-3L-C



Schematic diagram



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

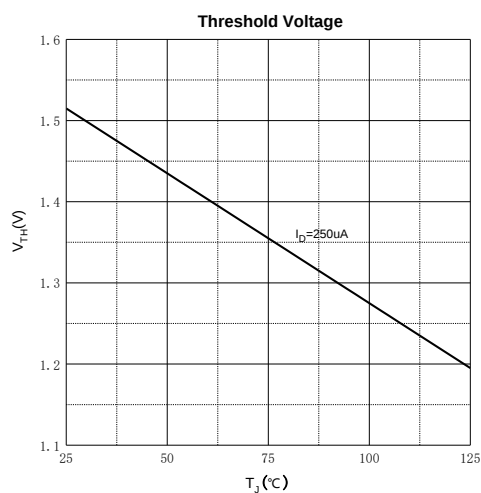
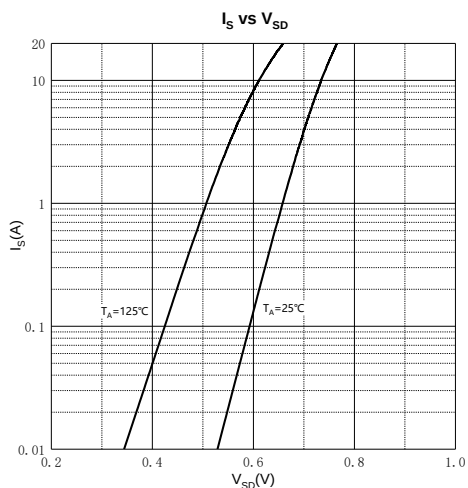
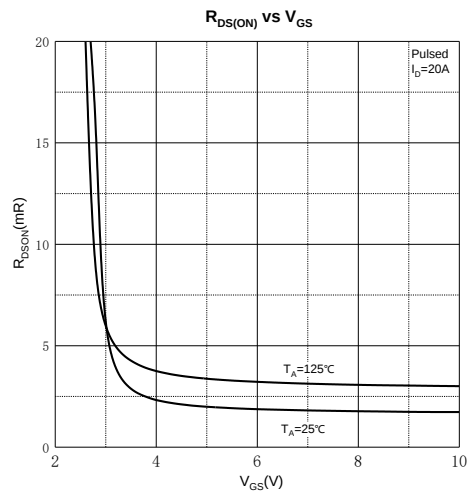
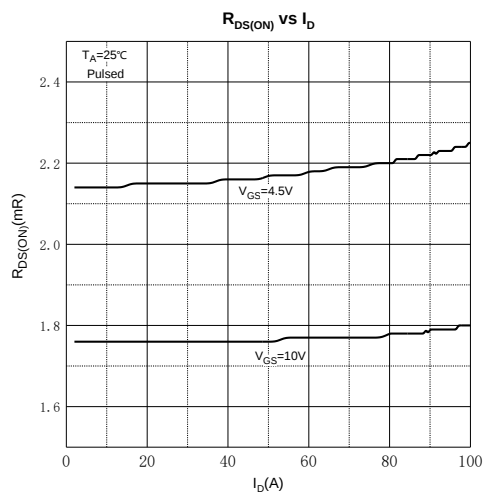
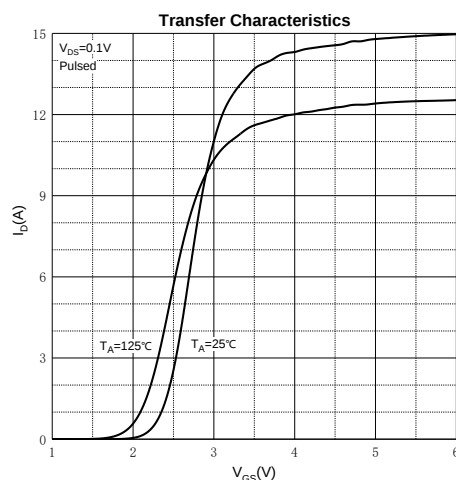
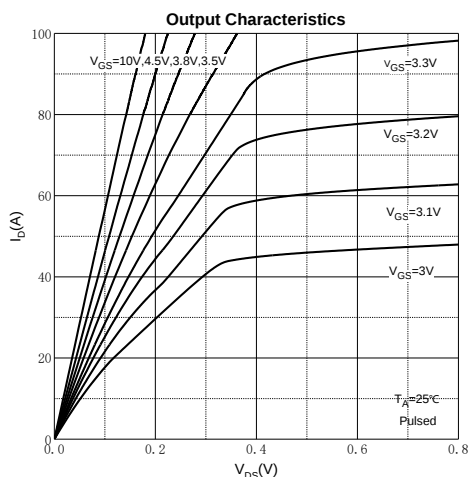
Parameter	Symbol	Value	Unit
Drain - Source Voltage	V_{DS}	30	V
Gate - Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹	I_D	150	A
Pulsed Drain Current ²	I_{DM}	600	A
Single Pulsed Avalanche Current ³	I_{AS}	51	A
Single Pulsed Avalanche Energy ³	E_{AS}	1300	mJ
Power Dissipation ⁵	P_D	34.7	W
Power Dissipation ⁶	P_D	2.1	W
Thermal Resistance from Junction to Ambient ⁶	$R_{\theta JA}$	60	$^\circ\text{C/W}$
Thermal Resistance from Junction to Case	$R_{\theta JC}$	3.6	$^\circ\text{C/W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55~ +150	$^\circ\text{C}$

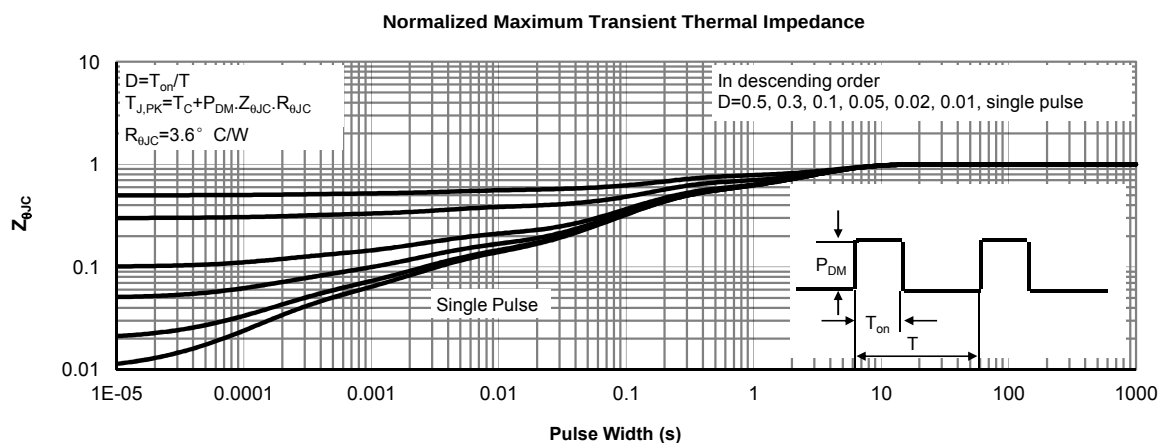
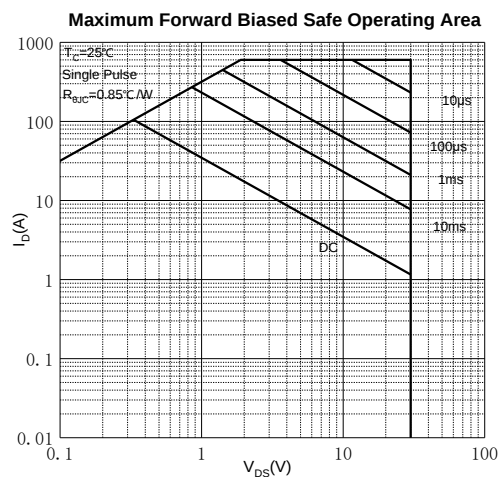
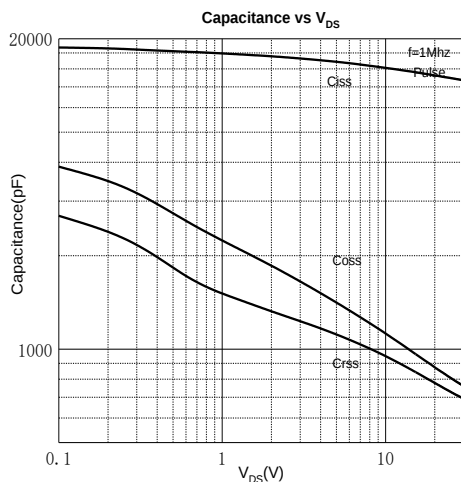
MOSFET ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise noted)

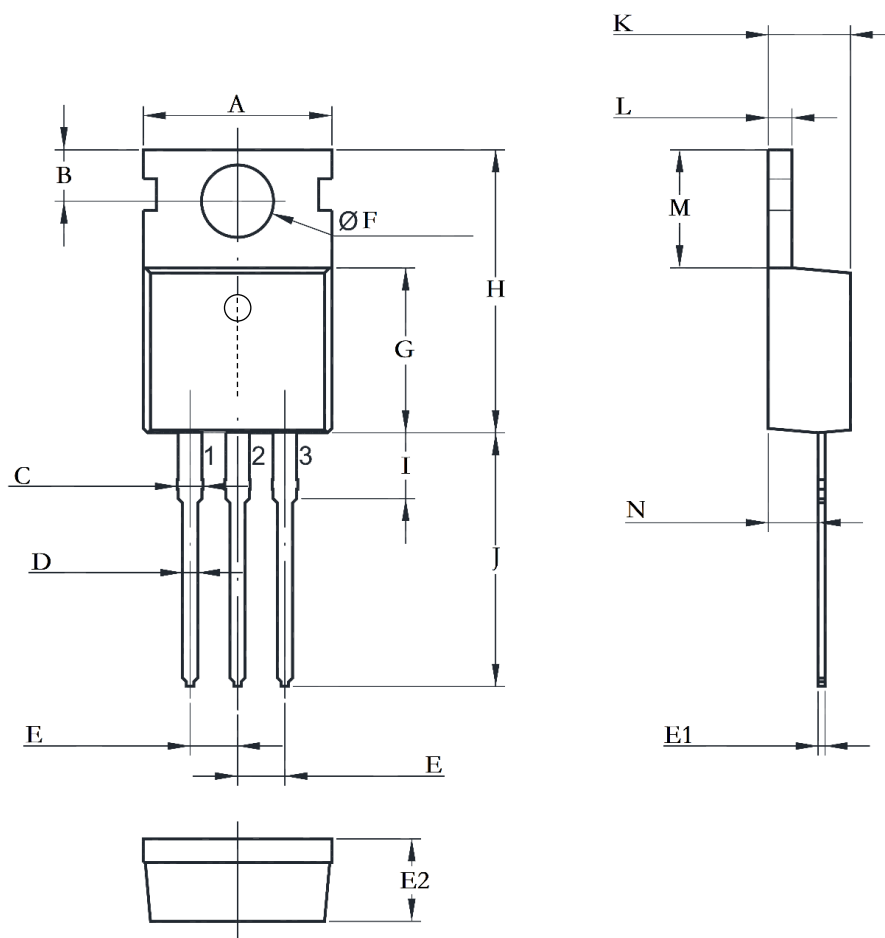
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain - Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 30V, V _{GS} = 0V			1	μA
Gate - Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	nA
On Characteristics ⁴						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	1.0	1.5	3.0	V
Drain-source On-resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 20A		1.7	2.8	mΩ
		V _{GS} = 4.5V, I _D = 10A		2.1	3.5	
Forward Transconductance	g _{FS}	V _{DS} = 5V, I _D = 20A		100		S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = 15V, V _{GS} = 0V, f = 1MHz		7741		pF
Output Capacitance	C _{oss}			972		
Reverse Transfer Capacitance	C _{rss}			849		
Gate Resistance	R _g	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz		1.6		Ω
Switching Characteristics						
Total Gate Charge	Q _g	V _{DS} = 15V, V _{GS} = 10V, I _D = 10A		141.9		nC
Gate-source Charge	Q _{gs}			18.5		
Gate-drain Charge	Q _{gd}			24.6		
Turn-on Delay Time	t _{d(on)}	V _{DD} = 20V, V _{GS} = 10V, R _L = 1Ω R _G = 3Ω		19		ns
Turn-on Rise Time	t _r			7		
Turn-off Delay Ttime	t _{d(off)}			69		
Turn-off Fall Time	t _f			10		
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 ≤ 10μs, duty cycle ≤ 1%.
- 3.EAS condition: V_{DD} = 45V, V_{GS} = 10V, L = 1mH, R_G = 25Ω Starting T_J = 25°C.
- 4.Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.
- 5.The power dissipation P_D is limited by T_{J(MAX)} = 150°C.And device mounted on a large heatsink
- 6.Device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A = 25°C.

Typical Characteristics




TO-220-3L-C Package Information


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	9.600	10.400	0.378	0.409
B	2.800TYP		0.110TYP	
C	1.200	1.600	0.047	0.063
D	0.600	1.000	0.024	0.039
E	2.540TYP		0.100TYP	
E1	0.300	0.700	0.012	0.028
E2	4.300	4.700	0.169	0.185
F	3.400	4.000	0.134	0.157
G	8.850	9.350	0.348	0.368
H	14.600	16.100	0.575	0.634
I	2.800	4.200	0.110	0.165
J	12.600	14.800	0.496	0.583
K	4.300	4.700	0.169	0.185
L	1.000	1.400	0.039	0.055
M	5.840	7.000	0.230	0.276
N	1.800	2.900	0.071	0.114