

Product Summary

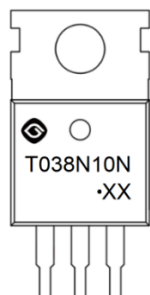
$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
100V	3.7mΩ@10V	135A

Feature

- Split Gate Trench Technology
- Low $R_{DS(on)}$
- Low Gate Charge
- Low Gate Resistance
- 100% UIS Tested

Application

- Industrial Power Supply
- Load Switch

MARKING:


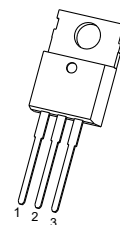
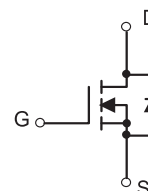
T038N10N = Device Code

XX = Date Code

Solid Dot = Green Indicator

TO-220-3L-C

1. GATE
2. DRAIN
3. SOURCE


Schematic diagram

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

Parameter	Symbol	Value	Unit
Drain - Source Voltage	V_{DS}	100	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous Drain Current ¹	I_D	135	A
Pulsed Drain Current ²	I_{DM}	540	A
Single Pulsed Avalanche Current ³	I_{AS}	66	A
Single Pulsed Avalanche Energy ³	E_{AS}	1090	mJ
Power Dissipation ⁵	P_D	156	W
Thermal Resistance from Junction to Ambient ⁶	$R_{\theta JA}$	60	°C/W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	0.8	°C/W
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55~ +150	°C

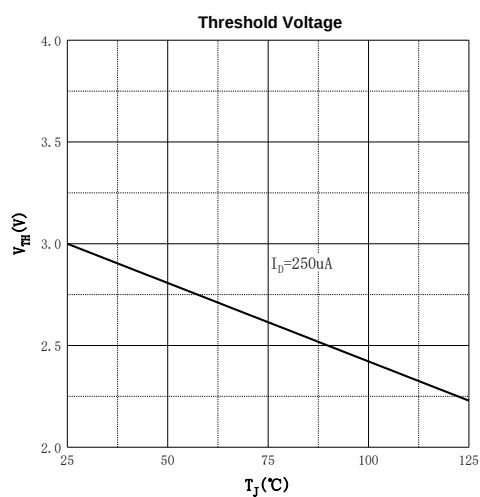
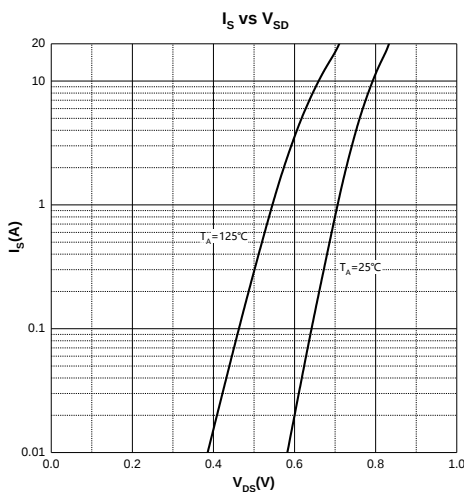
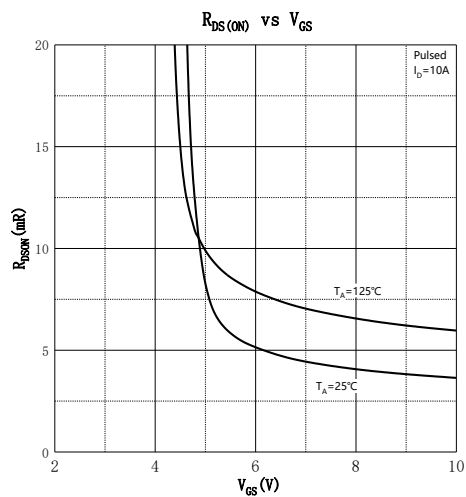
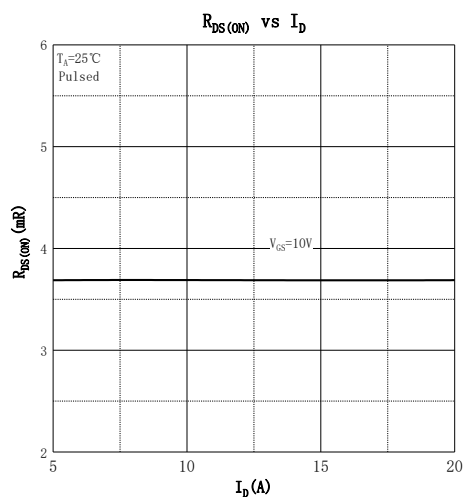
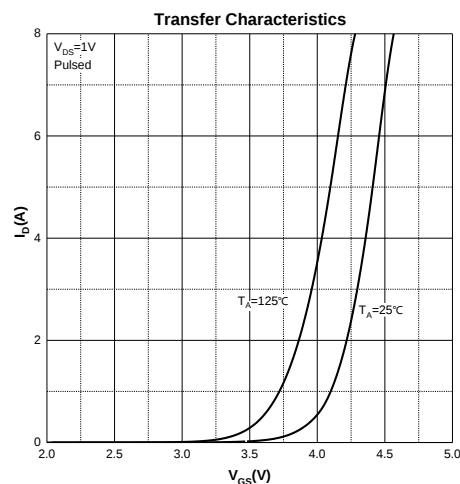
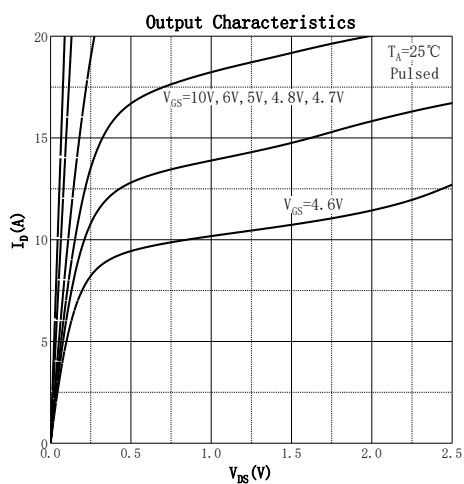
MOSFET ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise noted)

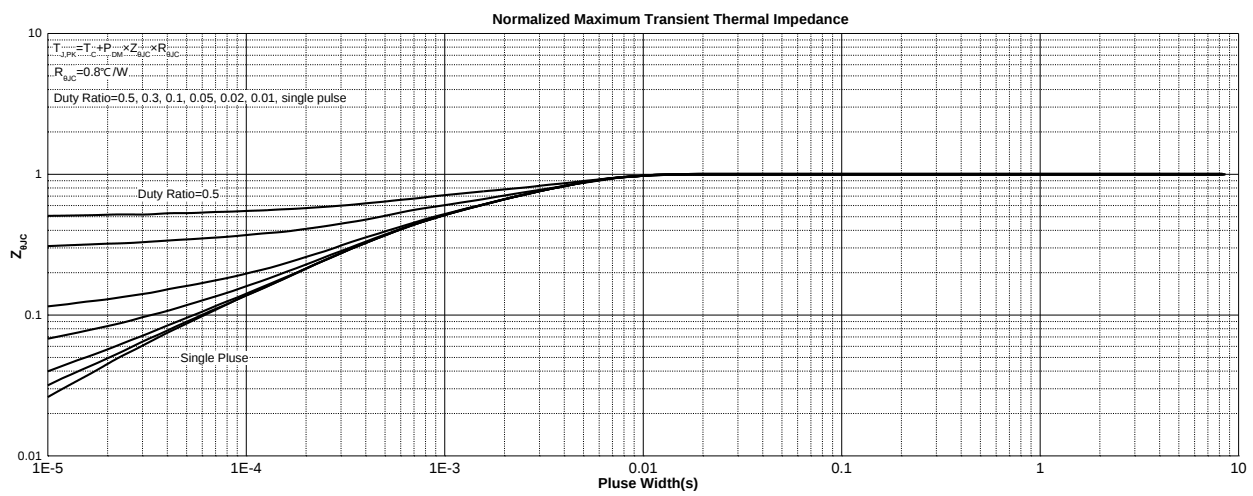
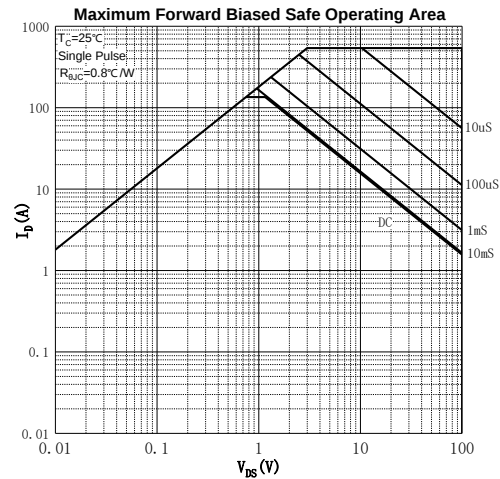
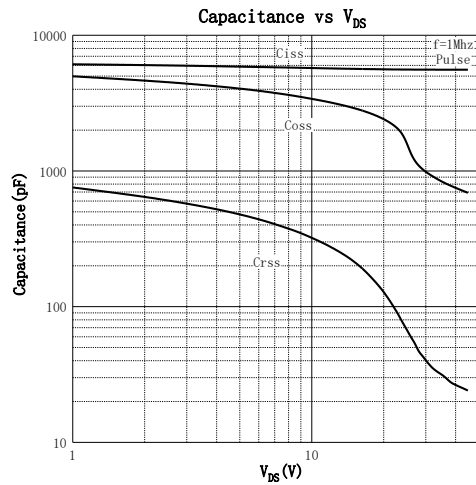
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain - Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	100			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 80V, V _{GS} = 0V			1	μA
Gate - Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	nA
On Characteristics ⁴						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	2	3	4	V
Drain-source On-resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 40A		3.7	5.1	mΩ
Forward Transconductance	g _{FS}	V _{DS} = 5V, I _D = 40A		50		S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = 50V, V _{GS} = 0V, f = 1MHz		5451		pF
Output Capacitance	C _{oss}			700		
Reverse Transfer Capacitance	C _{rss}			20		
Gate Resistance	R _g	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz		1		Ω
Switching Characteristics						
Total Gate Charge	Q _g	V _{DS} = 50V, V _{GS} = 10V, I _D = 60A		110		nC
Gate-source Charge	Q _{gs}			34		
Gate-drain Charge	Q _{gd}			28		
Turn-on Delay Time	t _{d(on)}	V _{DD} = 50V, V _{GS} = 10V, R _L = 0.8Ω R _G = 3Ω		17		ns
Turn-on Rise Time	t _r			10		
Turn-off Delay Ttime	t _{d(off)}			50		
Turn-off Fall Time	t _f			12		
Source - Drain Diode Characteristics						
Diode Forward Voltage ⁴	V _{SD}	V _{GS} = 0V, I _S = 40A			1.2	V

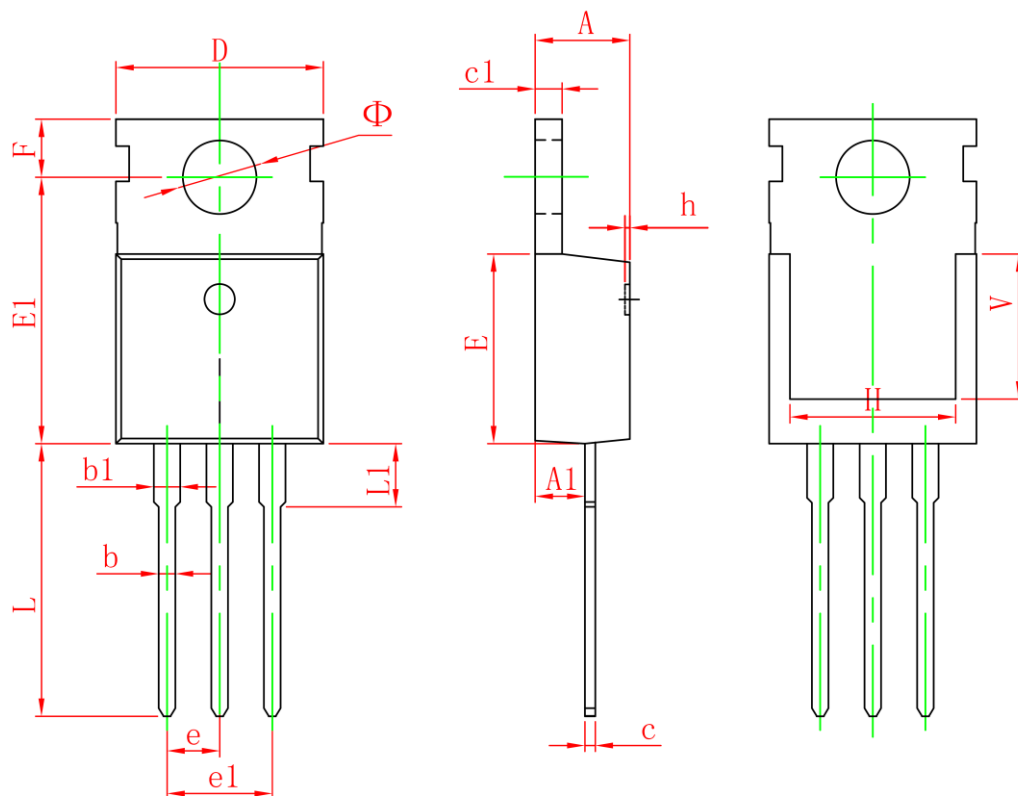
Notes :

- 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} = 50V, V_{GS} = 10V, L = 0.5mH, 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	4.400	4.600	0.173	0.181
A1	2.250	2.550	0.089	0.100
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.330	0.650	0.013	0.026
c1	1.200	1.400	0.047	0.055
D	9.910	10.250	0.390	0.404
E	8.950	9.750	0.352	0.384
E1	12.650	13.050	0.498	0.514
e	2.540TYP		0.100TYP	
e1	4.980	5.180	0.196	0.204
F	2.650	2.950	0.104	0.116
H	7.900	8.100	0.311	0.319
h	0.000	0.300	0.000	0.012
L	12.900	13.400	0.508	0.528
L1	2.850	3.250	0.112	0.128
V	6.900REF		0.272REF	
Φ	3.400	3.800	0.134	0.150