

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
40V	1.7m Ω @10V	180A
	1.9m Ω @4.5V	

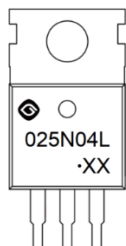
Feature

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

Application

- Power Switching Application

MARKING:

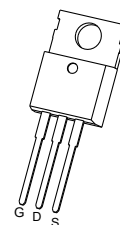


025N04L = Device Code

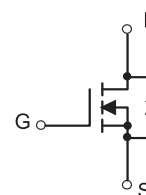
XX = Date Code

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}	40	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current ¹	$T_C = 25^\circ\text{C}$	I_D	180	A
Continuous Drain Current ¹	$T_C = 100^\circ\text{C}$	I_D	114	A
Pulsed Drain Current ²		I_{DM}	720	A
Single Pulsed Avalanche Current ³		I_{AS}	38	A
Single Pulsed Avalanche Energy ³		E_{AS}	735	mJ
Power Dissipation ⁵	$T_C = 25^\circ\text{C}$	P_D	156	W
Thermal Resistance from Junction to Ambient ⁶		$R_{\theta JA}$	60	$^\circ\text{C/W}$
Thermal Resistance from Junction to Case		$R_{\theta JC}$	0.8	$^\circ\text{C/W}$
Junction Temperature		T_J	150	$^\circ\text{C}$
Storage Temperature		T_{STG}	-55~+150	$^\circ\text{C}$

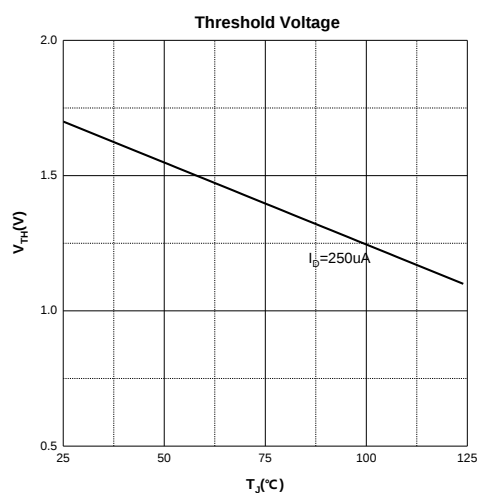
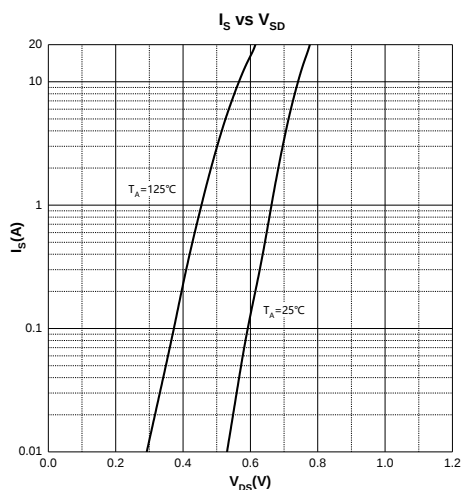
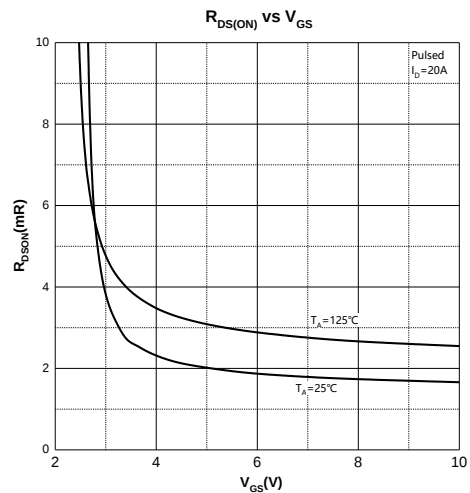
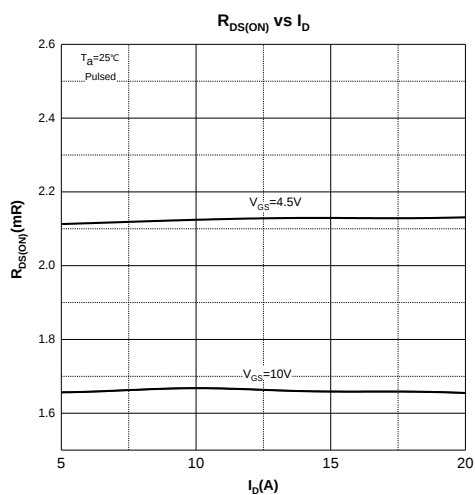
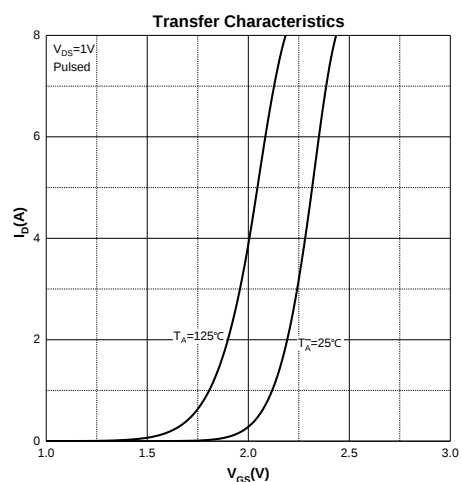
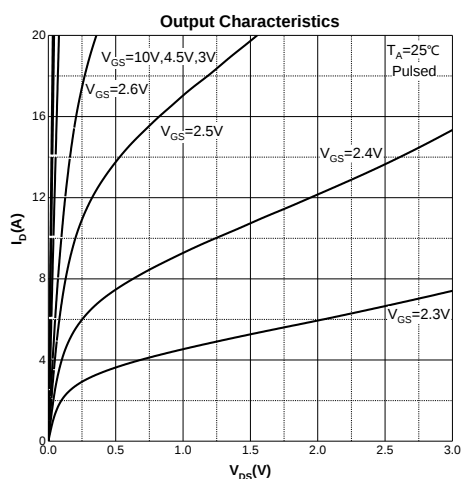
MOSFET ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise noted)

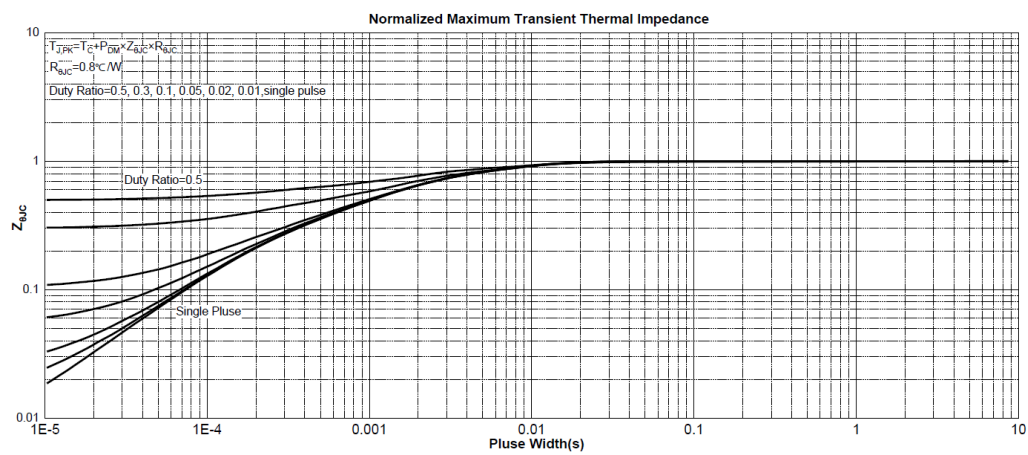
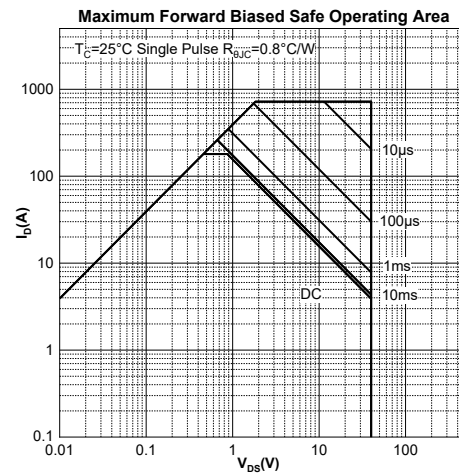
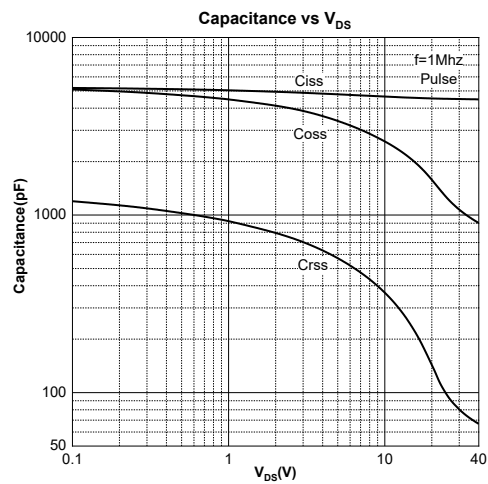
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	40			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 32V, V _{GS} = 0V			1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	nA
On Characteristics ⁴						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	1.0	1.7	3.0	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 20A		1.7	2.5	mΩ
		V _{GS} = 4.5V, I _D = 20A		1.9	3.0	
Forward Transconductance	g _{FS}	V _{DS} = 5V, I _D = 20A	50			S
Dynamic Characteristics						
Input Capacitance	C _{iSS}	V _{DS} = 20V, V _{GS} = 0V, f = 1MHz		4279		pF
Output Capacitance	C _{oSS}			1744		
Reverse Transfer Capacitance	C _{rSS}			118		
Gate Resistance	R _g	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz		2		Ω
Switching Characteristics						
Total Gate Charge	Q _g	V _{DS} = 20V, V _{GS} = 10V, I _D = 20A		65		nC
Gate-Source Charge	Q _{gs}			15		
Gate-Drain Charge	Q _{gd}			5.2		
Turn-On Delay Time	t _{d(on)}	V _{DD} = 20V, V _{GS} = 10V, R _L = 1Ω R _G = 3Ω		12		ns
Turn-On Rise Time	t _r			9		
Turn-Off Delay Time	t _{d(off)}			52		
Turn-Off Fall Time	t _f			15		
Source-Drain Diode Characteristics						
Diode Forward Voltage ⁴	V _{SD}	V _{GS} = 0V, I _S = 20A			1.2	V

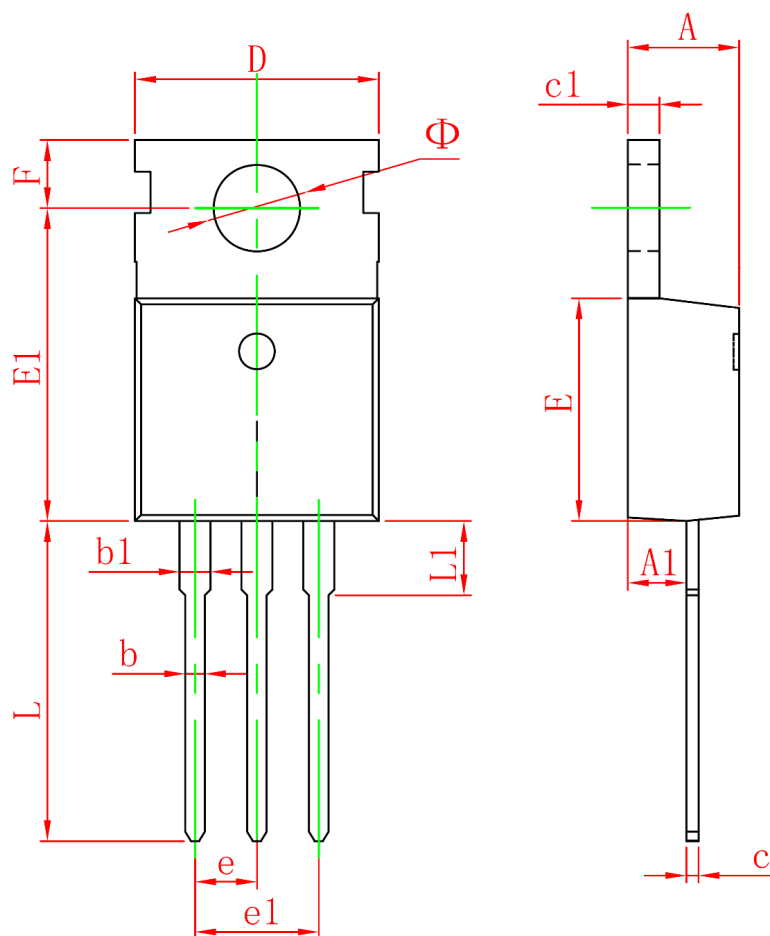
Notes:

- 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} = 15V, 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







Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.300	4.700	0.169	0.185
A1	2.200	2.600	0.087	0.102
b	0.600	1.000	0.024	0.039
b1	1.150	1.600	0.045	0.063
c	0.300	0.700	0.012	0.028
c1	1.000	1.400	0.039	0.055
D	9.600	10.400	0.378	0.409
E	8.800	9.750	0.346	0.384
E1	11.800	13.300	0.465	0.524
e	2.540BSC		0.100BSC	
e1	4.840	5.320	0.191	0.209
F	2.600	3.000	0.102	0.118
L	12.600	14.800	0.496	0.583
L1	2.800	4.200	0.110	0.165
Φ	3.400	4.000	0.134	0.157

Attention:

- GreenPower Electronics reserves the right to improve product design function and reliability without notice.
- Any and all semiconductor products have certain probability to fail or malfunction, which may result in personal injury, death or property damage. Customer are solely responsible for providing adequate safe measures when design their systems.
- GreenPower Electronics products belong to consumer electronics or other civilian electronic products.