

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
120V	6.5mΩ@10V	120A

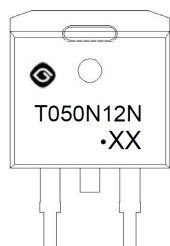
Feature

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

Application

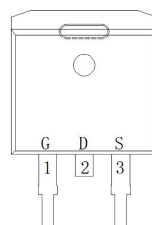
- Power Switching Application

MARKING:

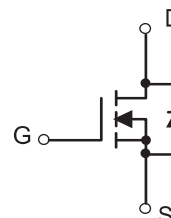


T050N12N = Device Code
XX = Date Code
Solid Dot = Green Indicator

TO-263-2L



Schematic diagram



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

Parameter		Symbol	Value	Unit
Drain - Source Voltage		V_{DS}	120	V
Gate - Source Voltage		V_{GS}	±20	V
Continuous Drain Current ¹	$T_C = 25^\circ\text{C}$	I_D	120	A
	$T_C = 100^\circ\text{C}$	I_D	78	A
Pulsed Drain Current ²		I_{DM}	480	A
Single Pulsed Avalanche Current ³		I_{AS}	48	A
Single Pulsed Avalanche Energy ³		E_{AS}	576	mJ
Power Dissipation ⁵	$T_C = 25^\circ\text{C}$	P_D	225	W
Thermal Resistance from Junction to Ambient ⁶		$R_{\theta JA}$	52	$^\circ\text{C/W}$
Thermal Resistance from Junction to Case		$R_{\theta JC}$	0.55	$^\circ\text{C/W}$
Junction Temperature		T_J	150	$^\circ\text{C}$
Storage Temperature		T_{STG}	-55~ +150	$^\circ\text{C}$

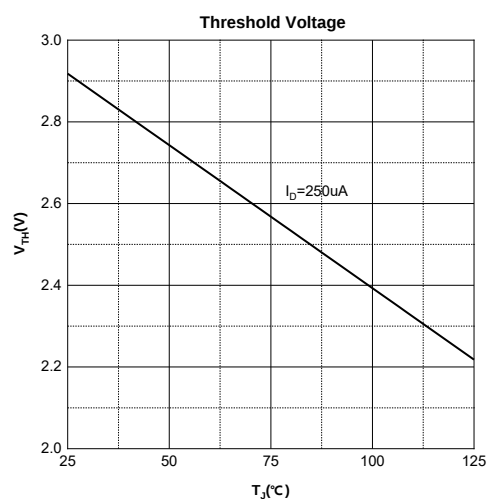
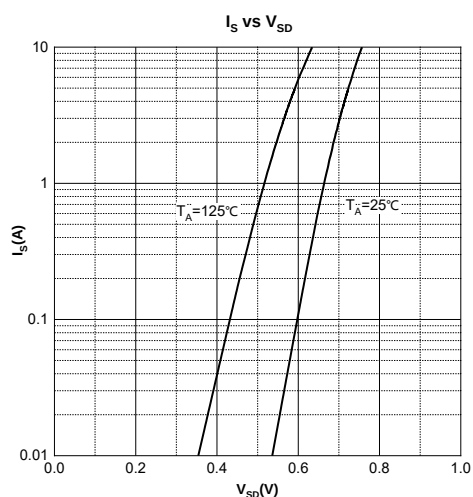
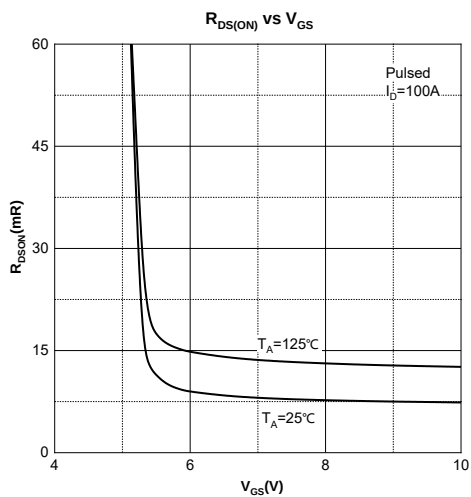
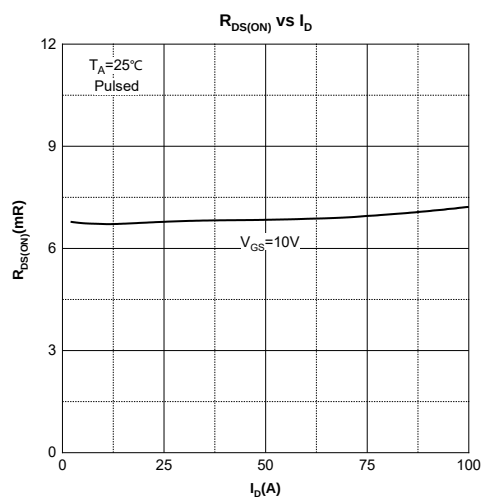
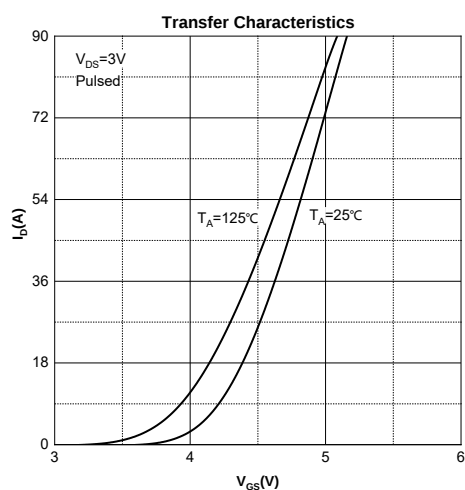
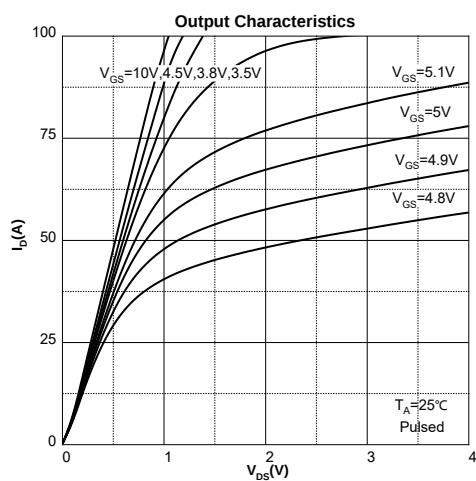
MOSFET ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$ unless otherwise noted)

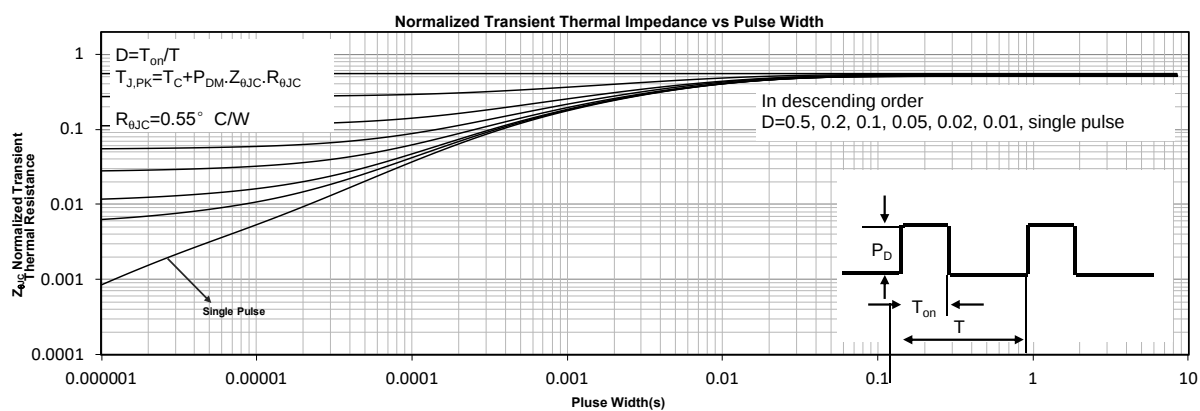
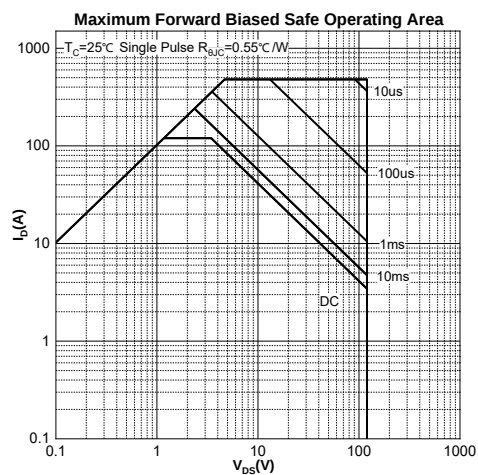
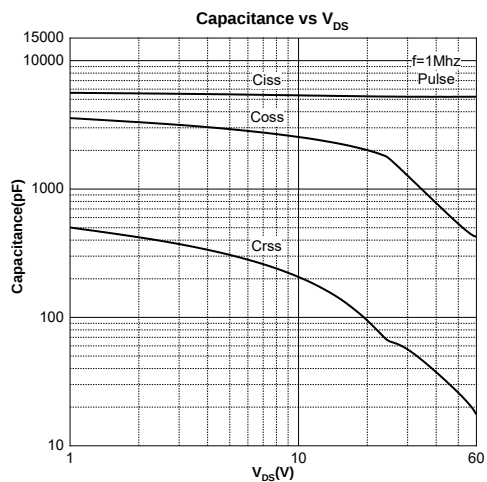
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain - Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	120			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 120V, V_{GS} = 0V$			1	μA
Gate - Body Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
On Characteristics ⁴						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2	2.8	4	V
Drain-source On-resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 20A$		6.5	8.5	m Ω
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS} = 60V, V_{GS} = 0V, f = 1MHz$		5231		pF
Output Capacitance	C_{oss}			426		
Reverse Transfer Capacitance	C_{rss}			17		
Gate Resistance	R_g	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$		2.4		Ω
Switching Characteristics						
Total Gate Charge	Q_g	$V_{DS} = 60V, V_{GS} = 10V, I_D = 20A$		63		nC
Gate-source Charge	Q_{gs}			20		
Gate-drain Charge	Q_{gd}			4		
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = 60V, V_{GS} = 10V, I_D = 20A,$ $R_G = 3\Omega$		14		ns
Turn-on Rise Time	t_r			8		
Turn-off Delay Time	$t_{d(off)}$			29		
Turn-off Fall Time	t_f			9		
Source - Drain Diode Characteristics						
Diode Forward Voltage ⁴	V_{SD}	$V_{GS} = 0V, I_S = 20A$			1.2	V

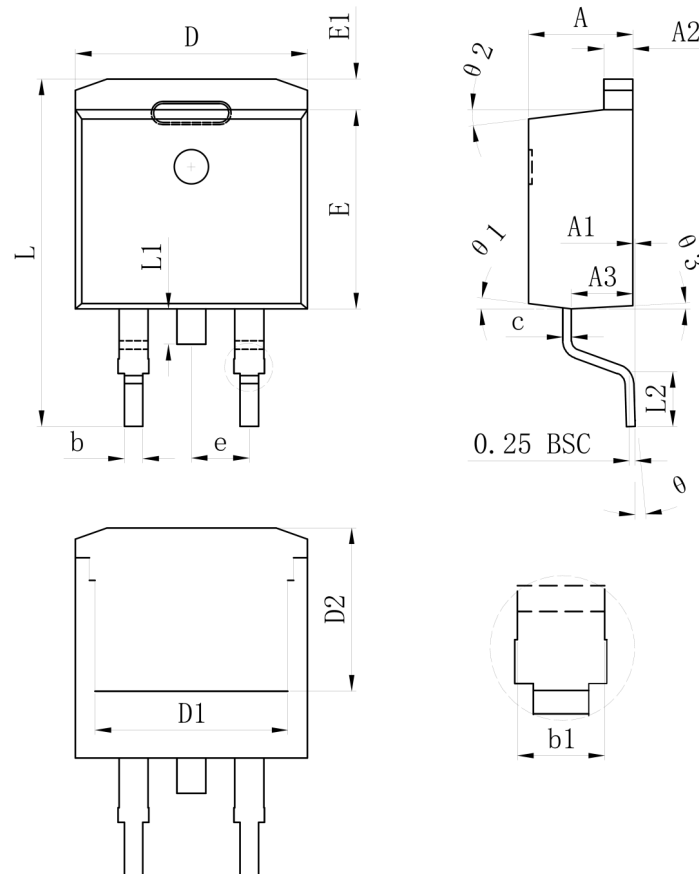
Notes :

- 1.The maximum current rating is limited by package.And device mounted on a large heatsink
- 2.Pulse Test : Pulse Width $\leq 10\mu s$, duty cycle $\leq 1\%$.
- 3.EAS condition: $V_{DD} = 50V, V_{GS} = 10V, L = 0.5mH, R_G = 25\Omega$ 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 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$.

Typical Characteristics





TO-263-2L Package Information


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.370	4.770	0.172	0.188
A1	0.000	0.250	0.000	0.010
A2	1.220	1.420	0.048	0.056
A3	2.490	2.890	0.098	0.114
b	0.700	0.960	0.028	0.038
b1	1.170	1.470	0.046	0.058
c	0.300	0.530	0.012	0.021
D	9.860	10.360	0.388	0.408
D1	8.400 REF		0.331 REF	
D2	7.073 REF		0.278 REF	
E	8.500	8.900	0.335	0.350
E1	1.070	1.470	0.042	0.058
e	2.540 TYP		0.100 TYP	
L	14.700	15.500	0.579	0.610
L1	1.400	1.700	0.055	0.067
L2	2.000	2.600	0.079	0.102
θ	0°	9°	0°	9°
θ1	7°TYP		7°TYP	
θ2	7°TYP		7°TYP	
θ3	3°TYP		3°TYP	