



芯基科技

# MPVX5N50CCFD Series Power MOSFET

## FEATURES

- $BV_{DSS}$ : 500V,  $I_D=5A$
- $R_{DS(on)}$ : 1.7Ω(Max) @  $V_{GS}=10V$
- Very Low FOM ( $R_{DS(on)} * Q_g$ )
- Excellent stability and uniformity

## APPLICATIONS

- Power switch circuit of adaptor and charger



## Ordering Information

Type NO.	Marking	Package Code
MPVU5N50CCFD	MPVU5N50CCFD	TO-251
MPVD5N50CCFD	MPVD5N50CCFD	TO-252

## Absolute Maximum Ratings $T_C = 25^\circ C$ , unless otherwise noted

Parameter	Symbol	Value	Unit
Drain-Source Voltage ( $V_{GS} = 0V$ )	$V_{DSS}$	500	V
Continuous Drain Current	$I_D$	5	A
Pulsed Drain Current (note1)	$I_{DM}$	20	A
Gate-Source Voltage	$V_{GSS}$	$\pm 20$	V
Single Pulse Avalanche Energy (note2)	$E_{AS}$	200	mJ
Gate Source ESD (HBM-C= 100pF, R=1.5kΩ)	$V_{ESD(G-S)}$	3000	V
Power Dissipation ( $T_C = 25^\circ C$ )	$P_D$	75	W
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-55~+150	$^\circ C$

## Thermal Resistance

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Case	$R_{thJC}$	1.67	$^\circ C/W$
Thermal Resistance, Junction-to-Ambient	$R_{thJA}$	100	



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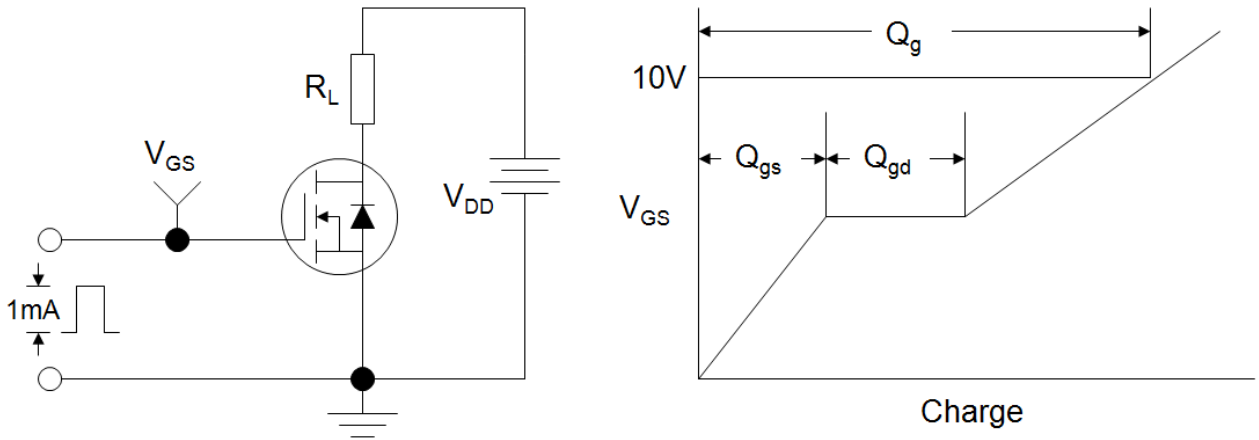
# MPVX5N50CCFD Series Power MOSFET

Specifications $T_J = 25^\circ\text{C}$ , unless otherwise noted						
Parameter	Symbol	Test Conditions	Value			Unit
			Min.	Typ.	Max.	
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	500	--	--	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 500V, V_{GS} = 0V, T_J = 25^\circ\text{C}$	--	--	10	$\mu A$
		$V_{DS} = 400V, V_{GS} = 0V, T_J = 125^\circ\text{C}$	--	--	250	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS} = \pm 20V$	--	--	$\pm 10$	$\mu A$
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	3.5	--	5.0	V
Drain-Source On-Resistance (Note4)	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 2.5A$	--	1.4	1.7	$\Omega$
<b>Dynamic</b>						
Input Capacitance	$C_{iss}$	$V_{GS} = 0V,$ $V_{DS} = 25V,$ $f = 1.0\text{MHz}$	--	580	--	pF
Output Capacitance	$C_{oss}$		--	61	--	
Reverse Transfer Capacitance	$C_{rss}$		--	4.1	--	
Total Gate Charge	$Q_g$	$V_{DD} = 400V, I_D = 5.0A,$ $V_{GS} = 10V$	--	14.5	--	nC
Gate-Source Charge	$Q_{gs}$		--	3.9	--	
Gate-Drain Charge	$Q_{gd}$		--	7.5	--	
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = 250V, I_D = 5.0A,$ $R_G = 10\Omega$	--	13.2	--	ns
Turn-on Rise Time	$t_r$		--	13.4	--	
Turn-off Delay Time	$t_{d(off)}$		--	19.6	--	
Turn-off Fall Time	$t_f$		--	7.4	--	
<b>Drain-Source Body Diode Characteristics</b>						
Continuous Body Diode Current	$I_S$	$T_C = 25^\circ\text{C}$	--	--	5	A
Pulsed Diode Forward Current	$I_{SM}$		--	--	20	
Body Diode Voltage	$V_{SD}$	$T_J = 25^\circ\text{C}, I_{SD} = 5.0A, V_{GS} = 0V$	--	--	1.5	V
Reverse Recovery Time	$t_{rr}$	$V_{GS} = 0V, I_F = 5.0A,$ $di_F/dt = 100A/\mu s$	--	100	140	ns
Reverse Recovery Charge	$Q_{rr}$		--	475	--	nC
Reverse Recovery Current	$I_{RRM}$		--	9.5	--	A

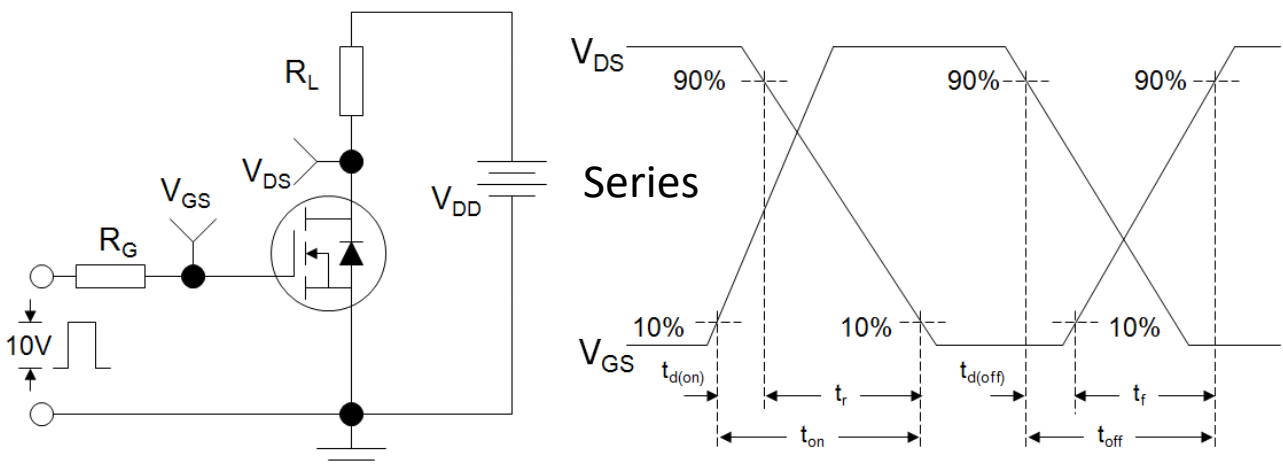
### Notes

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2.  $I_{AS} = 2A, V_{DD} = 50V, R_G = 25\Omega, \text{Starting } T_J = 25^\circ\text{C}$

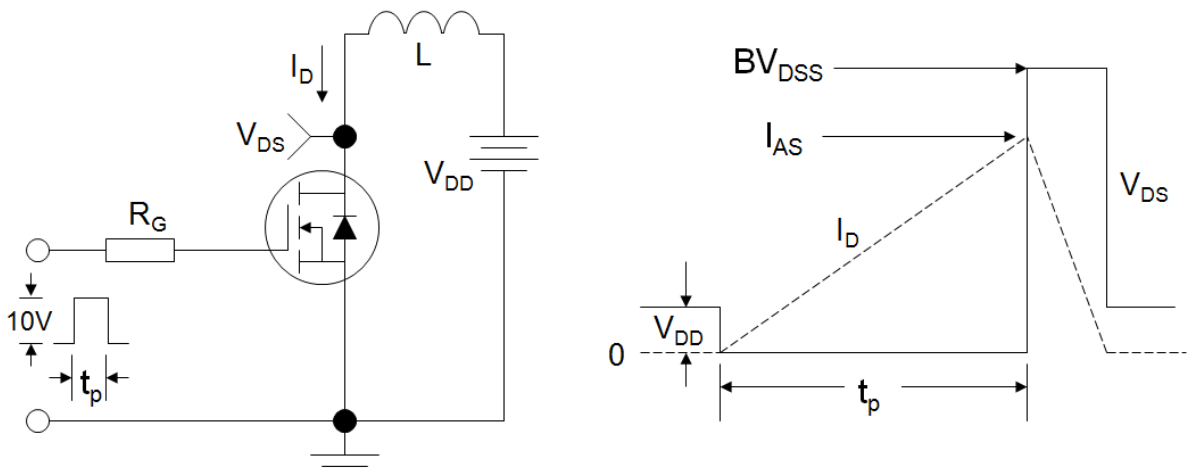
**Figure A: Gate Charge Test Circuit and Waveform**



**Figure B: Resistive Switching Test Circuit and Waveform**



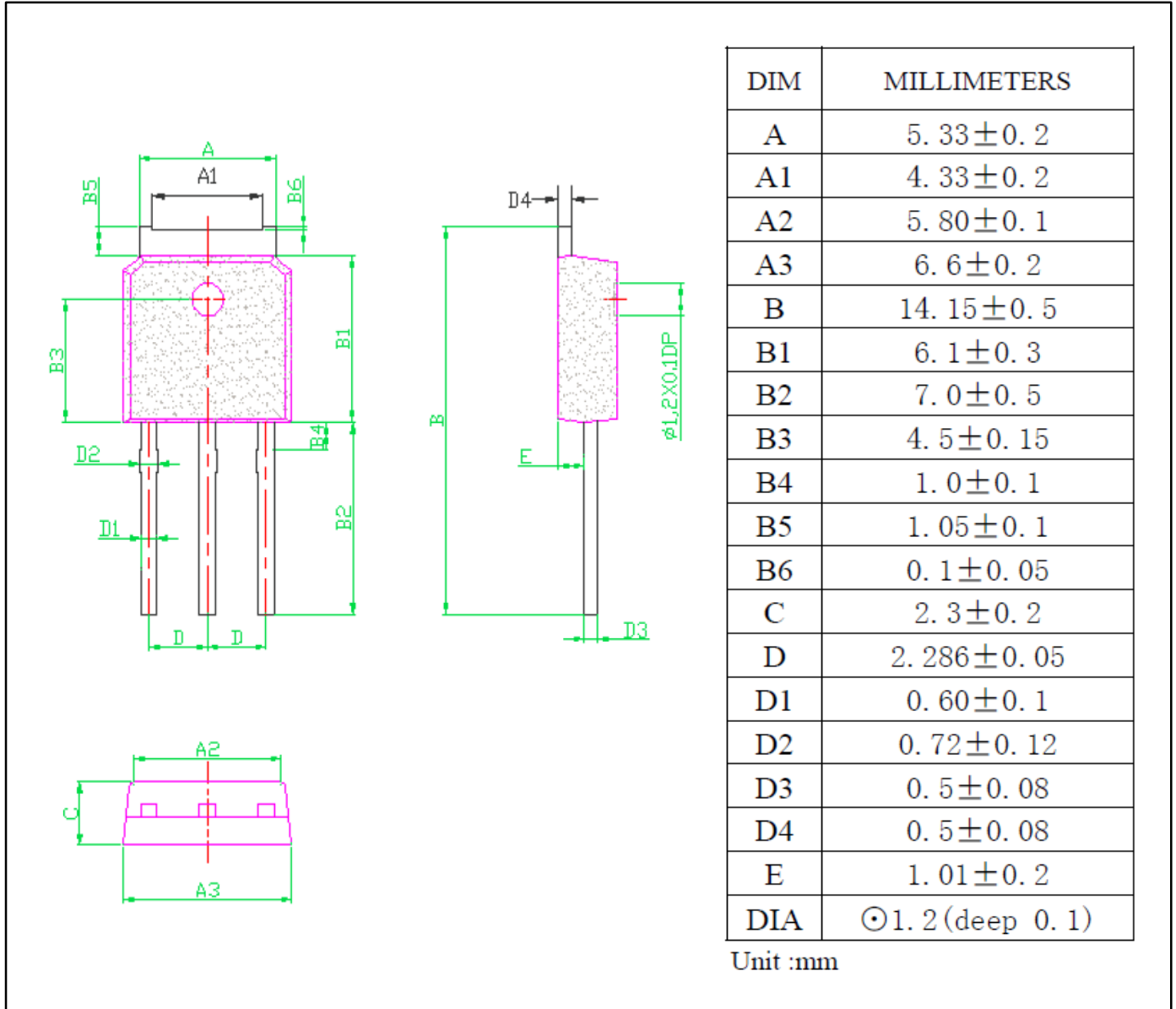
**Figure C: Unclamped Inductive Switching Test Circuit and Waveform**



**Outline Dimension**

Unit: mm

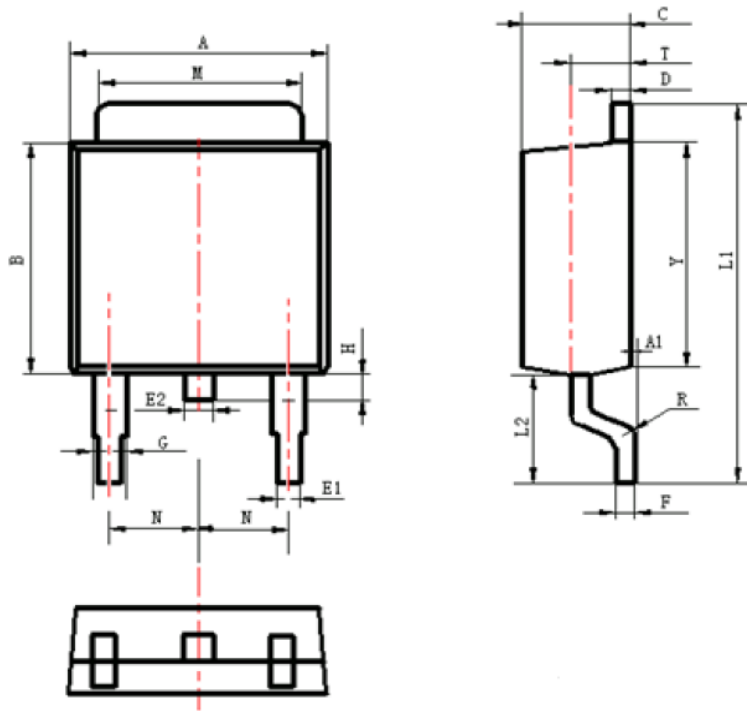
**TO-251**



**Outline Dimension**

Unit: mm

**TO-252**



Items	Values(mm)	
	MIN	MAX
A	6.30	6.90
A1	0	0.13
B	5.70	6.30
C	2.10	2.50
D	0.30	0.70
E1	0.60	0.90
E2	0.70	1.00
F	0.30	0.60
G	0.70	1.20
L1	9.60	10.50
L2	2.70	3.10
H	0.60	1.00
M	5.10	5.50
N	2.09	2.49
R	0.3	
T	1.40	1.60
Y	5.10	6.30