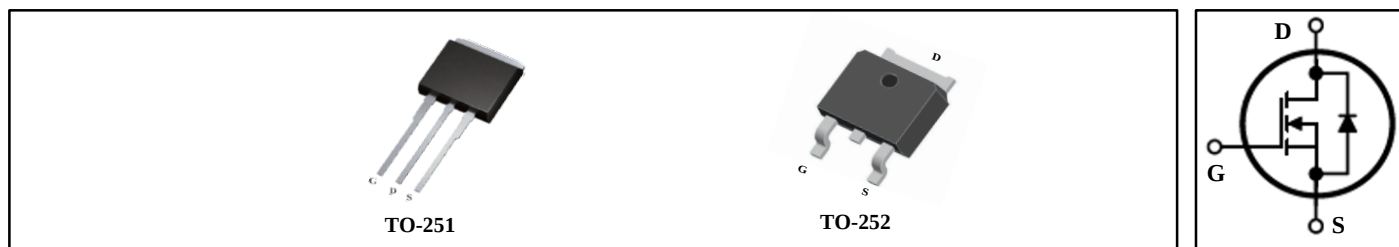


FEATURES

- BV_{DSS} : 500V, $I_D=5A$
- $R_{DS(on)}$: $1.7\Omega(\text{Max}) @ V_{GS}=10V$
- 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	MP5N50CCFD	TO-251
MPVD5N50CCFD	MP5N50CCFD	TO-252

Absolute Maximum Ratings $T_C = 25^\circ\text{C}$, 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}	± 20	V
Single Pulse Avalanche Energy (note2)	E_{AS}	200	mJ
Gate Source ESD (HBM-C= 100pF, R=1.5k Ω)	$V_{ESD(G-S)}$	3000	V
Power Dissipation ($T_C = 25^\circ\text{C}$)	P_D	75	W
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55~+150	$^\circ\text{C}$

Thermal Resistance

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

Specifications $T_J = 25^\circ\text{C}$, unless otherwise noted

Parameter	Symbol	Test Conditions	Value			Unit
			Min.	Typ.	Max.	
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	500	--	--	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 500V, V _{GS} = 0V, T _J = 25°C	--	--	10	μA
		V _{DS} = 400V, V _{GS} = 0V, T _J =125°C	--	--	250	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} = ±20V	--	--	±10	μA
Gate-Source Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	3.5	--	5.0	V
Drain-Source On-Resistance (Note4)	R _{DS(on)}	V _{GS} = 10V, I _D = 2.5A	--	1.4	1.7	Ω
Dynamic						
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = 25V, f = 1.0MHz	--	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 = 10Ω	--	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	--	
Drain-Source Body Diode Characteristics						
Continuous Body Diode Current	I _S	T _C = 25°C	--	--	5	A
Pulsed Diode Forward Current	I _{SM}		--	--	20	
Body Diode Voltage	V _{SD}	T _J = 25°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/μs	--	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. $I_{AS} = 2A, V_{DD} = 50V, R_G = 25\Omega$, Starting $T_J = 25^\circ\text{C}$

Figure A: Gate Charge Test Circuit and Waveform

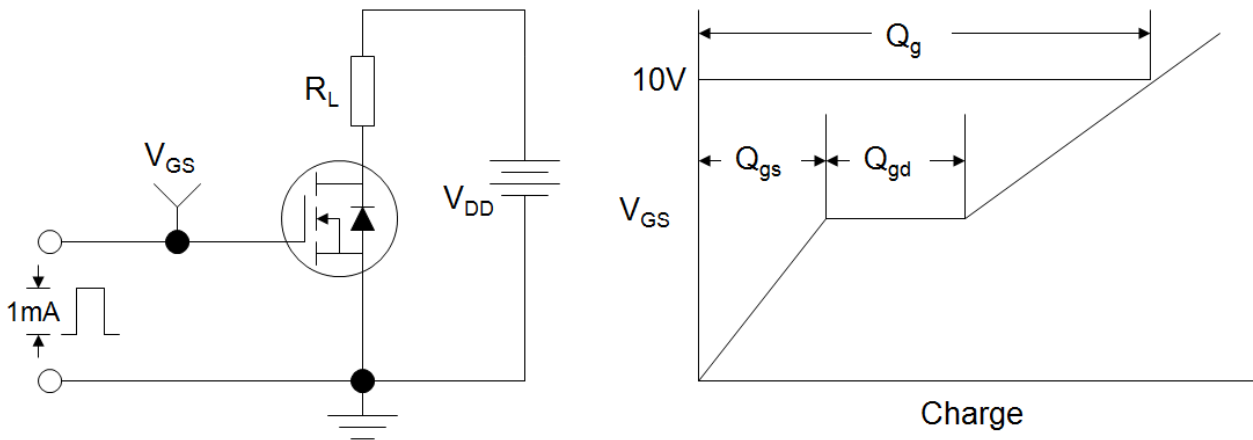


Figure B: Resistive Switching Test Circuit and Waveform

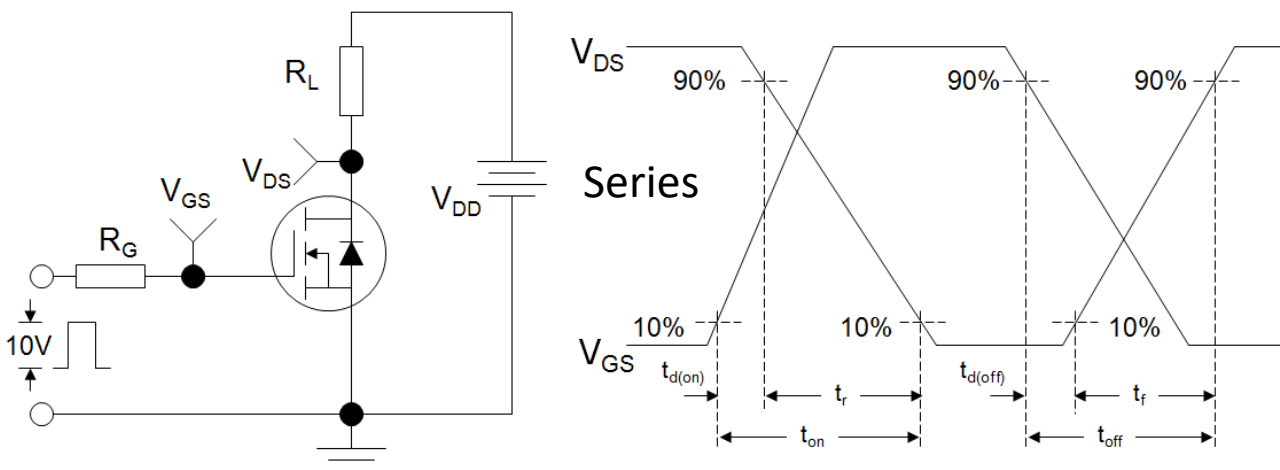
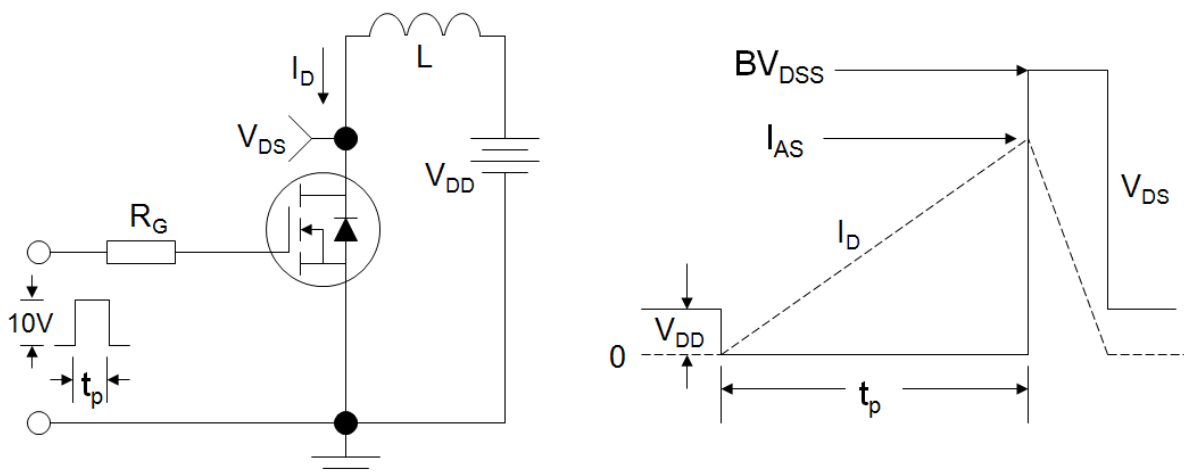


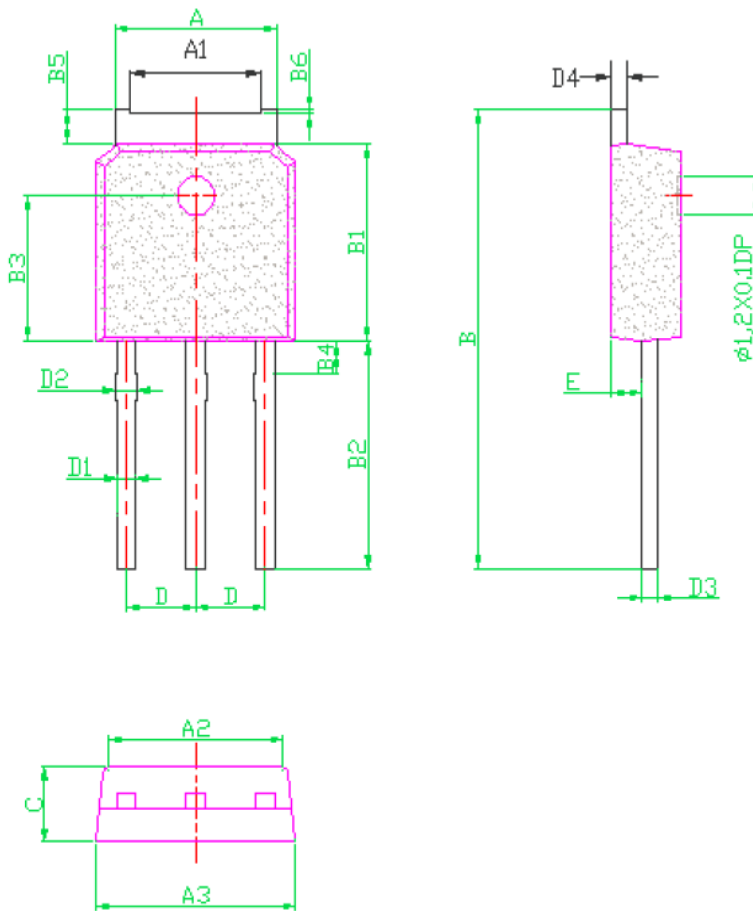
Figure C: Unclamped Inductive Switching Test Circuit and Waveform



Outline Dimension

Unit: mm

TO-251



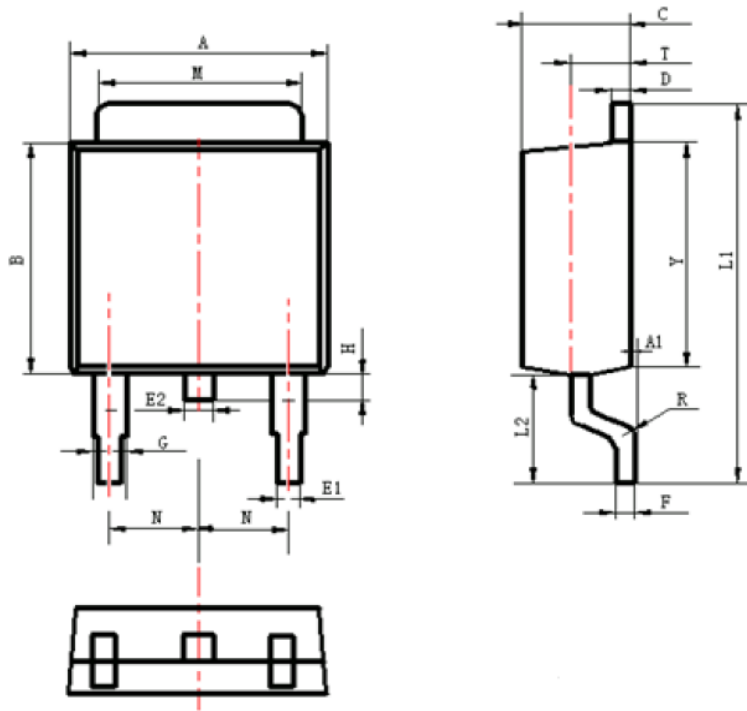
DIM	MILLIMETERS
A	5.33 ± 0.2
A1	4.33 ± 0.2
A2	5.80 ± 0.1
A3	6.6 ± 0.2
B	14.15 ± 0.5
B1	6.1 ± 0.3
B2	7.0 ± 0.5
B3	4.5 ± 0.15
B4	1.0 ± 0.1
B5	1.05 ± 0.1
B6	0.1 ± 0.05
C	2.3 ± 0.2
D	2.286 ± 0.05
D1	0.60 ± 0.1
D2	0.72 ± 0.12
D3	0.5 ± 0.08
D4	0.5 ± 0.08
E	1.01 ± 0.2
DIA	$\odot 1.2$ (deep 0.1)

Unit :mm

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