MPVD7N65

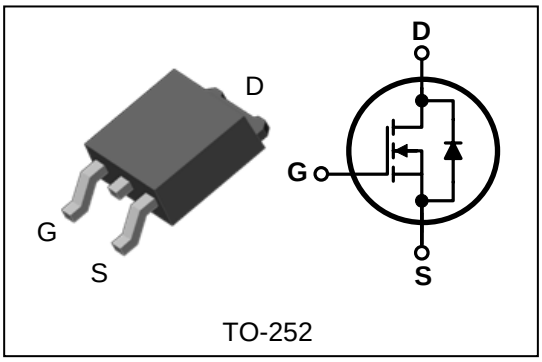
Power MOSFET

SWITCHING REGULATOR APPLICATIONS

Features

- Drain-Source breakdown voltage: BV_{DSS}=650V (Min.)
- Low gate charge: Q_g=20nC (Typ.)
- Low drain-source On resistance: $R_{DS(on)}$=1.35 Ω (Max.)
- 100% avalanche tested
- RoHS compliant device

PIN Connection



Ordering Information

ORDER CODE	MARKING	PACKING
MPVD7N65	**MPVD7N65**	**TO-252**

Absolute maximum ratings (T_C=25°C unless otherwise noted)

Characteristic	Symbol		Rating	Unit
Drain-source voltage	V		650	V
Gate-source voltage	V_{GSS}		±30	V
Drain current (DC) *	I_D	T_c=25°C	7.0	A
		T_c=100°C	5.48	A
Drain current (Pulsed) *	I_{DM}		28	A
Single avalanche current (Note 2)	I_{AS}		7.0	A
Single pulsed avalanche energy (Note 2)	E_{AS}		245	mJ
Repetitive avalanche current (Note 1)	I_{AR}		5.5	A
Repetitive avalanche energy (Note 1)	E_{AR}		2.9	mJ
Power dissipation	P_D		58	W
Junction temperature	T_J		150	°C
Storage temperature range	T_{stg}		-55~150	°C

* Limited only maximum junction temperature

Thermal Characteristics

Characteristic	Symbol	Rating	Unit
Thermal resistance, junction to case	$R_{th(j-c)}$	Max. 4.27	°C/W
Thermal resistance, junction to ambient	$R_{th(j-a)}$	Max. 62.5	

Electrical Characteristics (T_C=25°C unless otherwise noted)

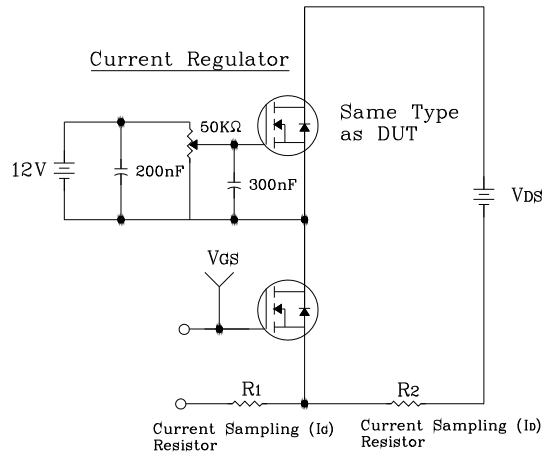
Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Drain-source breakdown voltage	BV_{DSS}	I_D=250uA, V_{GS}=0V	650	-	-	V
Gate threshold voltage	$V_{GS(th)}$	I_D=250uA, V_{DS}=V_{GS}	3	4	5	V
Drain-source cut-off current	I_{DSS}	V_{DS}=650V, V_{GS}=0V	-	-	1	uA
Gate leakage current	I_{GSS}	V_{DS}=0V, V_{GS}=±30V	-	-	±100	nA
Drain-source on-resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=3.5A			1.35	Ω
Forward transfer conductance (Note 3)	g_{fs}	V_{DS}=10V, I_D=3.5A	-	4	-	S
Input capacitance	C_{iss}	V_{DS}=25V, V_{GS}=0V, f=1.0MHz	-	760	1046	pF
Output capacitance	C_{oss}		-	67	92	
Reverse transfer capacitance	C_{rss}		-	9	12	
Turn-on delay time (Note 3,4)	$t_{d(on)}$	V_{DD}=325V, I_D=7.0A, R_G=25Ω	-	55	128	ns
Rise time (Note 3,4)	t_r		-	79	174	
Turn-off delay time (Note 3,4)	$t_{d(off)}$		-	94	208	
Fall time (Note 3,4)	t_f		-	33	75	
Total gate charge (Note 3,4)	Q_g	V_{DS}=400V, V_{GS}=10V, I_D=7.0A	-	20	-	nC
Gate-source charge (Note 3,4)	Q_{gs}		-	4	-	
Gate-drain charge (Note 3,4)	Q_{gd}		-	7	-	

Source-Drain Diode Ratings and Characteristics (T_C=25°C unless otherwise noted)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Source current (DC)	I_S	Integral reverse diode in the MOSFET	-	-	7.0	A
Source current (Pulsed)	I		-	-	28	A
Forward voltage	V_{SD}	V_{GS}=0V, I_S=7.0A	-	-	1.4	V
Reverse recovery time (Note 3,4)	t_{rr}	I_S=5.5A, V_{GS}=0V dI_F/dt=100A/us	-	494	-	ns
Reverse recovery charge (Note 3,4)	Q_{rr}		-	2	-	uC

Note:
1. Repeated rating: Pulse width limited by safe operating area
2. L=15mH, I_{AS}=5.5A, V_{DD}=50V, R_G=25Ω, Starting T_J=25°C
3. Pulse test: Pulse width≤300us, Duty cycle≤2%
4. Essentially independent of operating temperature typical characteristics

Fig. 12 Gate Charge Test Circuit & Waveform



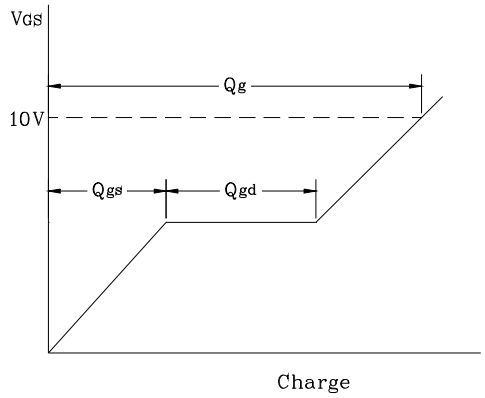
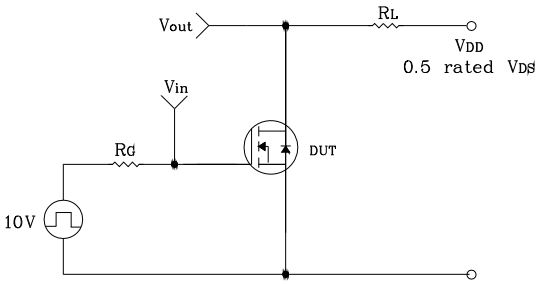


Fig. 13 Resistive Switching Test Circuit & Waveform



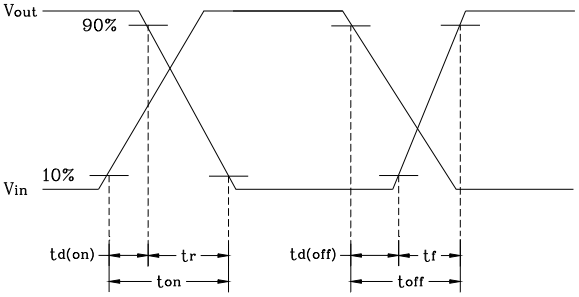
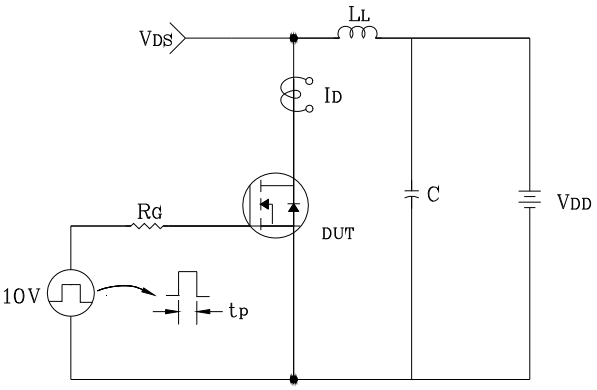


Fig. 14 E_{AS} Test Circuit & Waveform



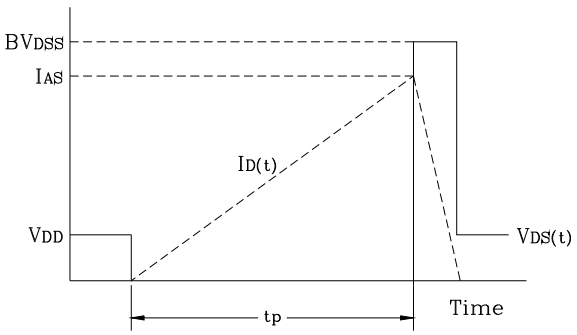
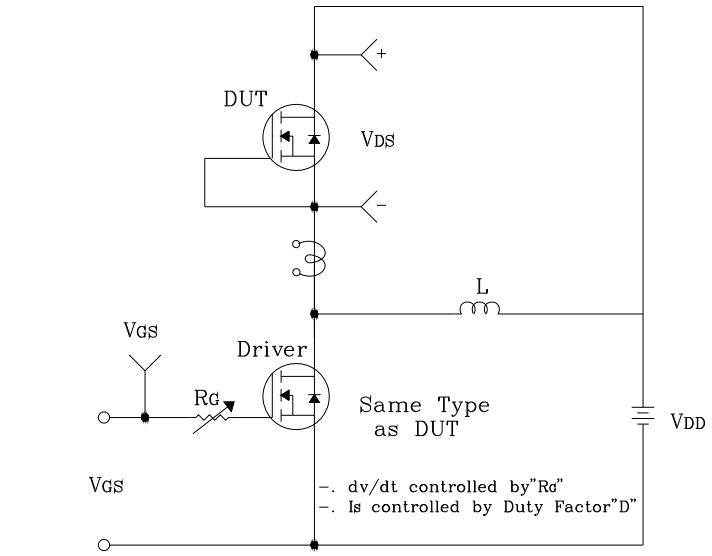
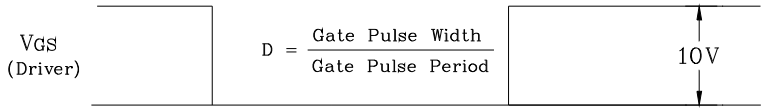
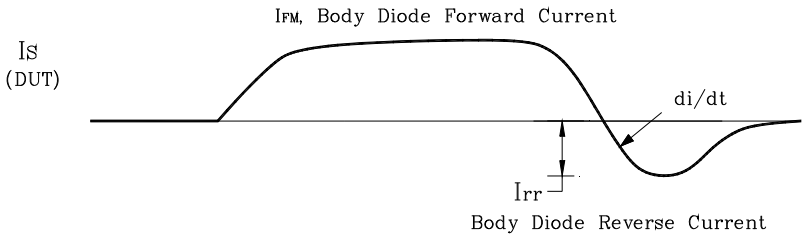
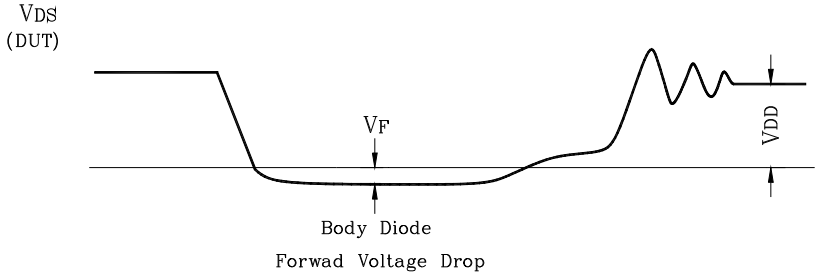


Fig. 15 Diode Reverse Recovery Time Test Circuit & Waveform



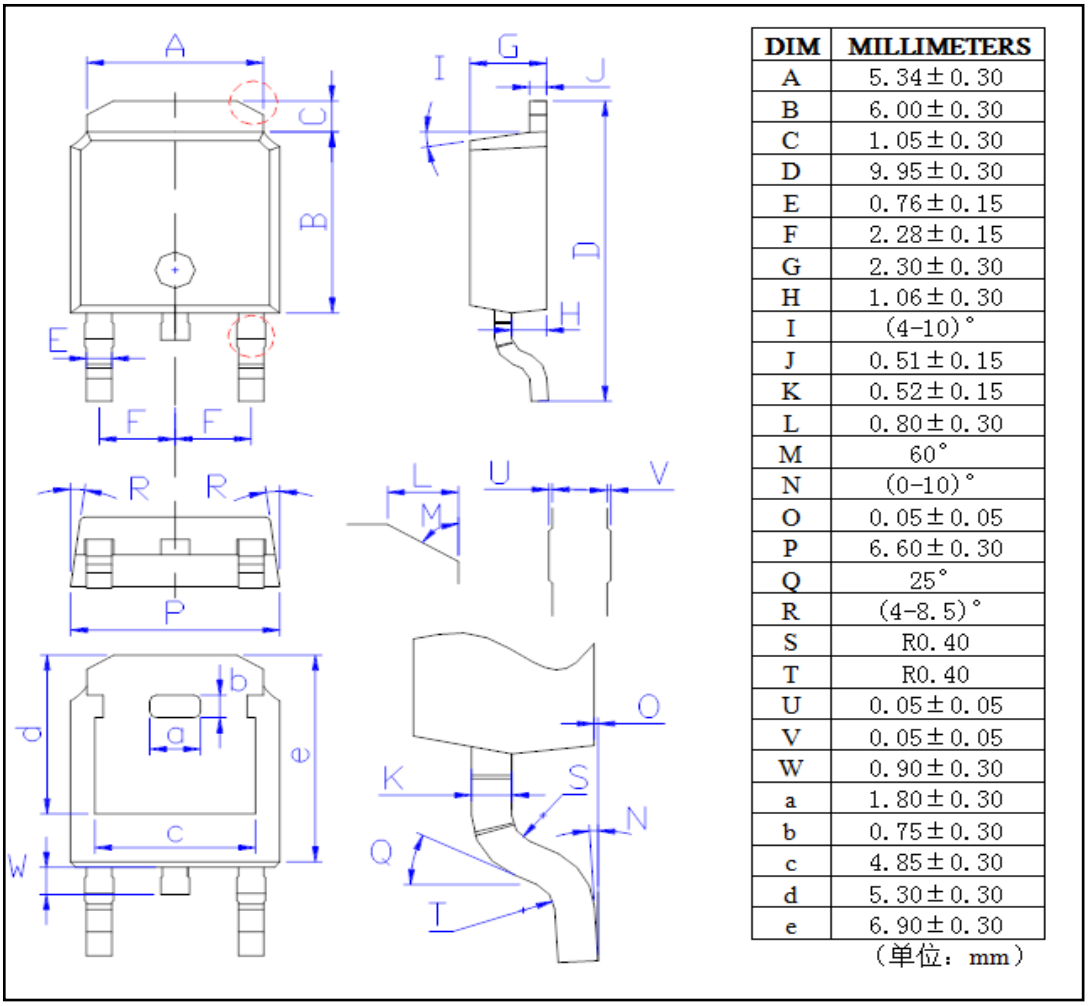






OUTLINE DIMENSION 产品尺寸图（Unit: mm）

TO-252



DIM	MILLIMETERS
A	5.34±0.30
B	6.00±0.30
C	1.05±0.30
D	9.95±0.30
E	0.76±0.15
F	2.28±0.15
G	2.30±0.30
H	1.06±0.30
I	(4-10)°
J	0.51±0.15
K	0.52±0.15
L	0.80±0.30
M	60°
N	(0-10)°
O	0.05±0.05
P	6.60±0.30
Q	25°
R	(4-8.5)°
S	R0.40
T	R0.40
U	0.05±0.05
V	0.05±0.05
W	0.90±0.30
a	1.80±0.30
b	0.75±0.30
c	4.85±0.30
d	5.30±0.30
e	6.90±0.30

（单位：mm）