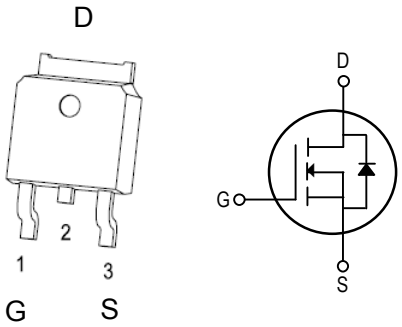
100V/12A N-Channel MOSFET

BVDSS	100	V
ID	12	A
R_{DSON}@V_{GS}=10V	90.0	mΩ
R_{DSON}@V_{GS}=4.5V	100.0	mΩ

TO-252



Features

- V_{DS}=100V; I_D=12A
  $R_{DS(ON)}$<140mΩ @ V_{GS}=10V (Typ:90mΩ)
- High UIS and UIS 100% Test

Application

- Power switching application
- Motor control
- Synchronous-rectification applications

Order Information

Product	Package	Marking	Packing
M10N12LJ	TO-252	PTD12N10	2500PCS/REF

Absolute Maximum Ratings (TA=25℃)

Symbol	Parameter	Value	Unit
V_{DS}	Drain-Source Voltage (V_{GS}=0V)	100	V
V_{GS}	Gate-Source Voltage (V_{DS}=0V)	±20	V
$I_{D\ (DC)}$	Drain Current (DC) at Tc=25℃ **(Note 1)**	12	A
$I_{DM\ (pluse)}$	Drain Current-Continuous@ Current-Pulsed **(Note 2)**	21	A
P_D	Maximum Power Dissipation(Tc=25℃)	24	W
E_{AS}	Single Pulse Avalanche Energy **(Note 3)**	3.1	mJ
T_J,T_{STG}	Operating Junction and Storage Temperature Range	-55 To 175	℃
$R_{\theta JC}$	Thermal Resistance,Junction-to-Case	8.3	℃/W

Notes 1. Calculated continuous current based on maximum allowable junction temperature.

2. Repetitive Rating: Pulse width limited by maximum junction temperature

3. E_{AS} condition:T_J=25℃,V_{DD}=50V,V_G=10V, R_G=25Ω

100V/12A N-Channel MOSFET

Electrical Characteristics (TA=25℃unless otherwise noted)

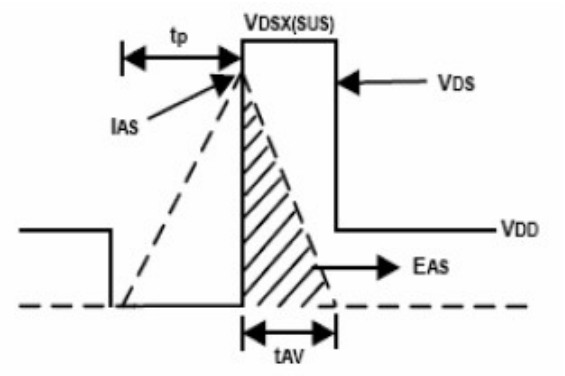
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V I_D=250μA	100			V
I_{DSS}	Zero Gate Voltage Drain Current(Tc=25℃)	V_{DS}=90V,V_{GS}=0V			1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V,V_{DS}=0V			±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250μA	1.0	2.0	3.0	V
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=10V, I_D=4.5A		90	140	mΩ
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=4.5V, I_D=4A		100	300	mΩ
Dynamic Characteristics						
g_{FS}	Forward Transconductance	V_{DS}=5V,I_D=4.5A	5			S
C_{iss}	Input Capacitance	V_{DS}=50V,V_{GS}=0V f=1.0MHz		208		PF
C_{oss}	Output Capacitance			28		PF
C_{rss}	Reverse Transfer Capacitance			1.6		PF
Q_g	Total Gate Charge	V_{DS}=50V,I_D=4.5A V_{GS}=10V		4.3		nC
Q_{gs}	Gate-Source Charge			1.6		nC
Q_{gd}	Gate-Drain Charge			1.2		nC
Switching Times						
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=50V,R_L=8.6Ω V_{GS}=10V,R_G=3Ω		14		nS
t_r	Turn-on Rise Time			3.6		nS
$t_{d(off)}$	Turn-Off Delay Time			21		nS
t_f	Turn-Off Fall Time			2.7		nS
Source-Drain Diode Characteristics						
I_{SD}	Source-Drain Current(Body Diode)			7		A
V_{SD}	Forward On Voltage **(Note 1)**	T_J=25℃,I_{SD}=2A,V_{GS}=0V		0.8	1.2	V
t_{rr}	Reverse Recovery Time **(Note 1)**	T_J=25℃,I_F=4.5A di/dt=500A/μs		32		nS
Q_{rr}	Reverse Recovery Charge **(Note 1)**			39		nC

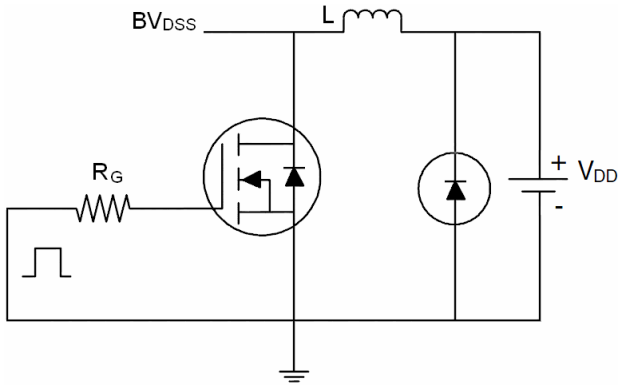
Notes 1.Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 1.5%, Starting T_J=25℃

100V/12A N-Channel MOSFET

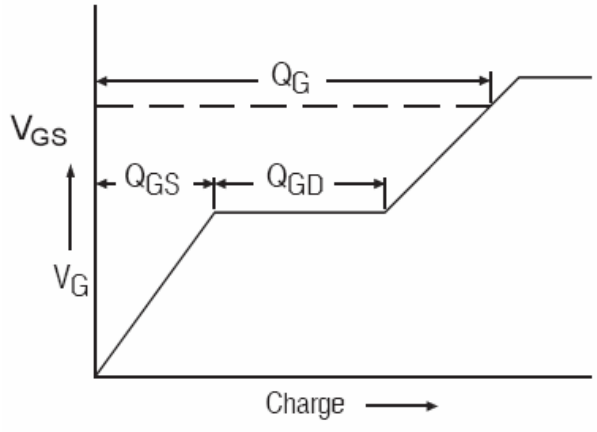
Test Circuit

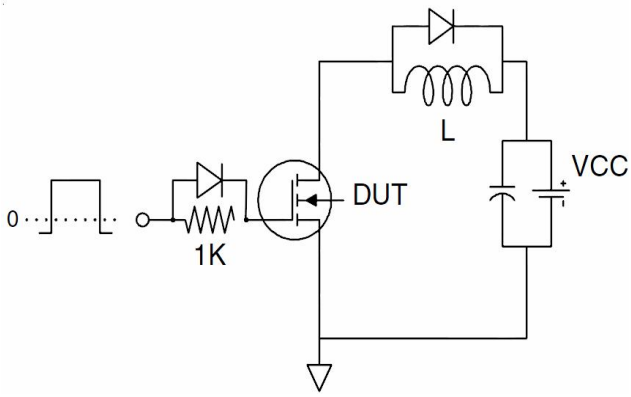
1) E_{AS} Test Circuits



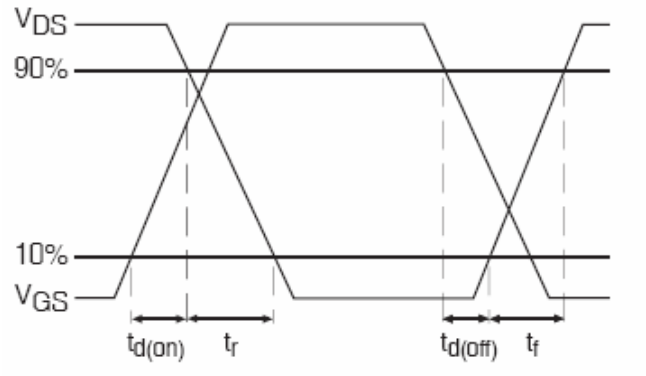


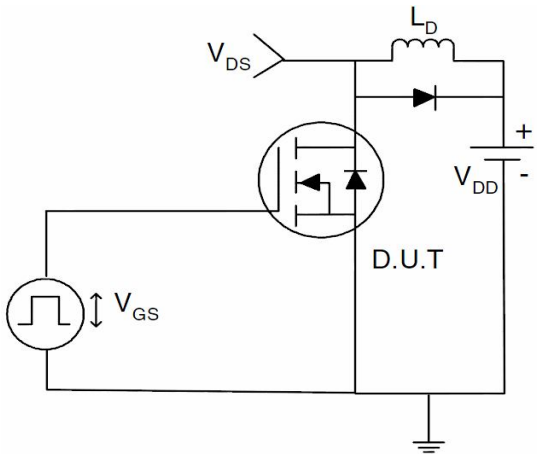
2) Gate Charge Test Circuit:





3) Switch Time Test Circuit:





100V/12A N-Channel MOSFET

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS (Curves)

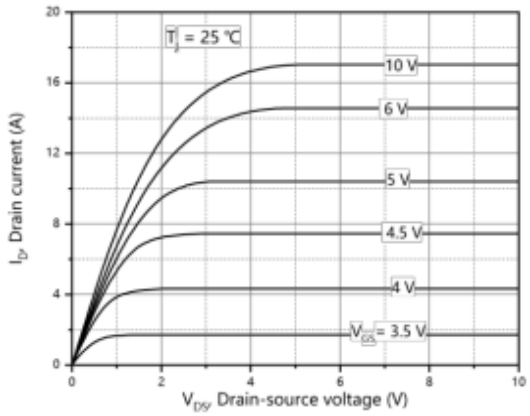


Figure 1, Typ. output characteristics

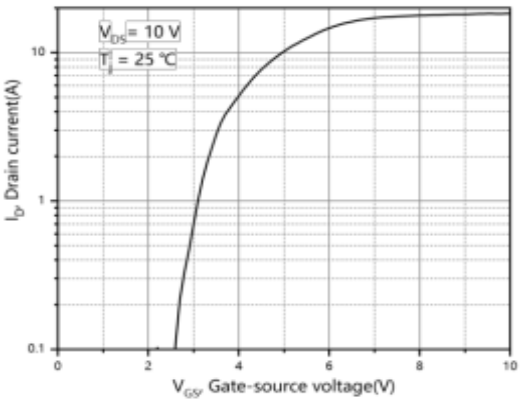


Figure 1, Typ. transfer characteristics

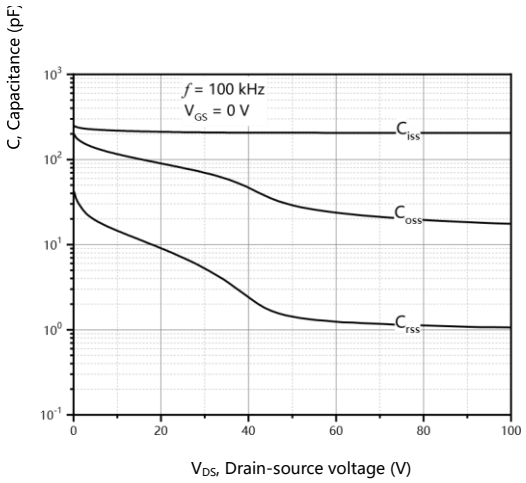


Figure 3, Typ. capacitances

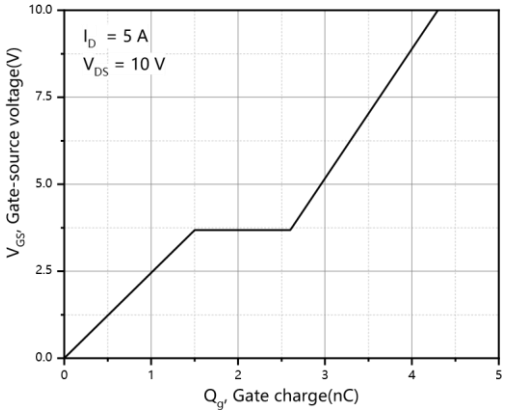


Figure 4, Typ. gate charge

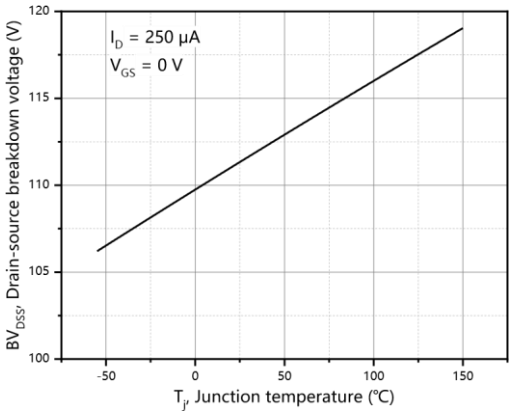


Figure 5, Drain-source breakdown voltage

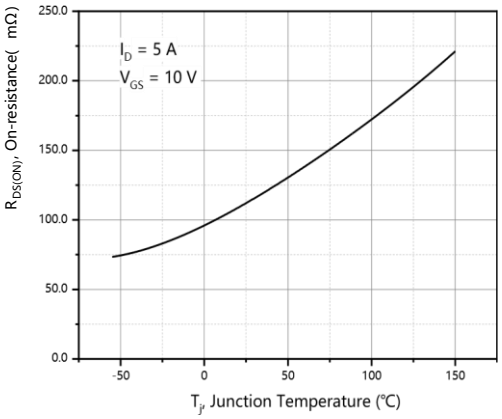
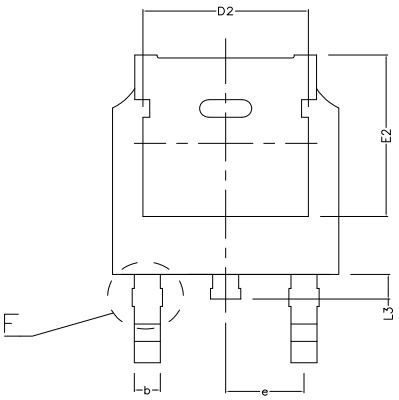


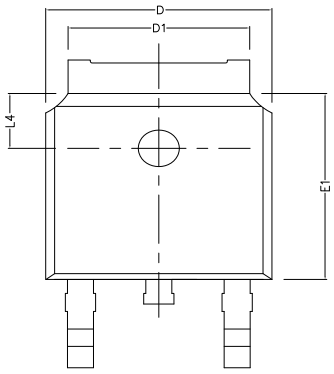
Figure 6, Drain-source on-state resistance

100V/12A N-Channel MOSFET

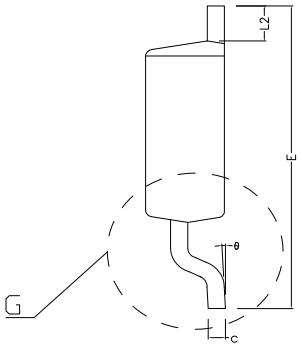
TO-252 **Package Outline Dimensions (Units: mm)**



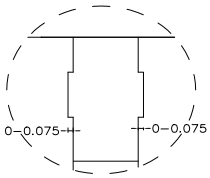
BOTTOM VIEW



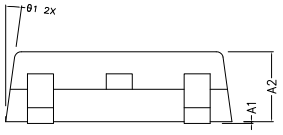
TOP VIEW



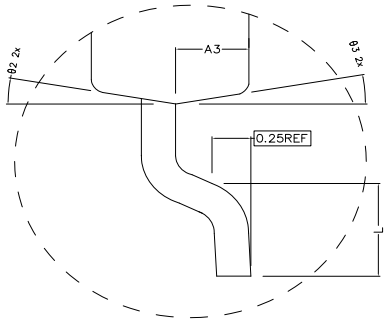
SIDE VIEW



DETAIL F



SIDE VIEW



DETAIL G

COMMON DIMENSIONS
(UNITS OF MEASURE IS mm)

	MIN	NORMAL	MAX
A1	0.000	0.100	0.150
A2	2.200	2.300	2.400
A3	1.020	1.070	1.120
b	0.710	0.760	0.810
c	0.460	0.508	0.550
D	6.500	6.600	6.700
D1	5.330REF		
D2	4.830REF		
E	9.900	10.100	10.300
E1	6.000	6.100	6.200
E2	5.600REF		
e	2.286TYPE		
L	1.400	1.550	1.700
L2	1.10REF		
L3	0.80REF		
L4	1.80REF		
θ	0~8°		
θ1	7° TYPE		
θ2	10° TYPE		
θ3	10° TYPE		