APD7002K1

N-Channel Enhancement Mosfet

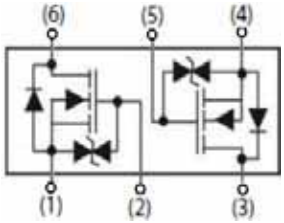
DATA SHEET

Features

- 60V,430mA
  $R_{DS(ON)}$ <3.0Ω @V_{GS}=10V TYP:1.9Ω
  $R_{DS(ON)}$ <4.0Ω @V_{GS}=4.5V TYP:2.4Ω
- Sensitive gate trigger current and
- Low Holding current.ESD protected diode.
- ESD rating:2200V HBM

Applications

- General purpose switching
- Phase control



PIN1、4 : S
PIN2、5 : G
PIN3、6 : D

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
72K	APD7002K1	SOT-363	-	-	3000

ABSOLUTE MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (T_C =25℃) (3)	I_D	0.43	A
Continuous Drain Current (T_C=100℃) (3)	I_D	0.25	A
Pulsed Drain Current (1,3)	I_{DM}	1.7	A
Drain Power Dissipation	P_D	0.83	W
Thermal Resistance- Junction to Ambient (2)	$R_{\theta JA}$	150	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~ +150	℃

Notes:

1. Pulse width ≤ 300 μs, duty cycle ≤ 2 %
2. Mounted on Large Heat Sink
3. Limited by bonding wire

MOSFET ELECTRICAL CHARACTERISTICS(T_a=25℃ unless otherwise noted)

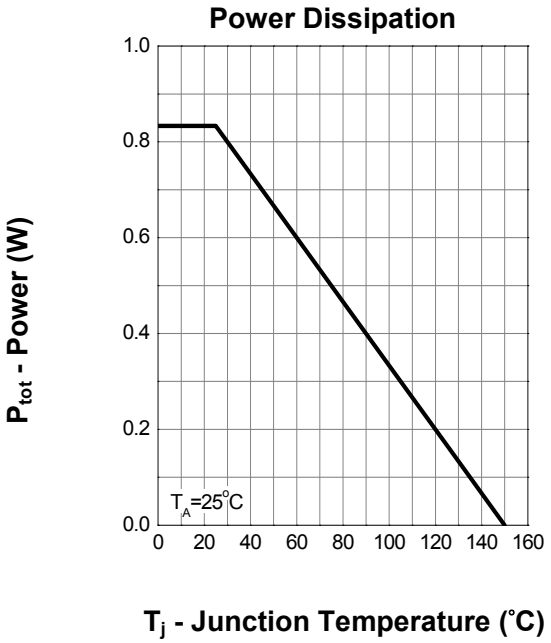
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	60	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS} =48V, V_{GS} = 0V	-	-	1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V	-	-	±10	μA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1.0	-	2.5	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =0.4A	-	1.9	3.0	Ω
		V_{GS} =4.5V, I_D =0.3A	-	2.4	4.0	Ω
Dynamic characteristics						
Input Capacitance	C_{iss}	V_{DS} =25V, V_{GS} =0V, f =1.0MHz	-	30	-	pF
Output Capacitance	C_{oss}		-	4.2	-	
Reverse Transfer Capacitance	C_{rss}		-	3	-	
Switching characteristics						
Turn-on delay time	$t_{d(on)}$	V_{DD}=30V, I_D=0.2A, R_G=25Ω, V_G=10V	-	3.9	-	ns
Turn-on rise time	t_r		-	3.5	-	
Turn-off delay time	$t_{d(off)}$		-	16	-	
Turn-off fall time	t_f		-	10	-	
Total Gate Charge	Qg	V_{DS}=10V, I_D=0.4A, V_{GS}=4.5V	-	305	-	nC
Gate-Source Charge	Qgs		-	85	-	
Gate-Drain Charge	Qgd		-	205	-	
Source-Drain Diode characteristics						
Diode Forward voltage	V_{SD}	T_C=25℃, V_{GS} =0V, I_S=0.4A	-	0.7	1.3	V
Diode Forward current	I_S	T_C=25℃	-	-	100	A
Body Diode Reverse Recovery Time	trr	T_C=25℃，IF=0.4A,di/dt=100A/us		40		ns
Body Diode Reverse Recovery Charge	Qrr	T_C=25℃，IF=0.4A,di/dt=100A/us		40		uc

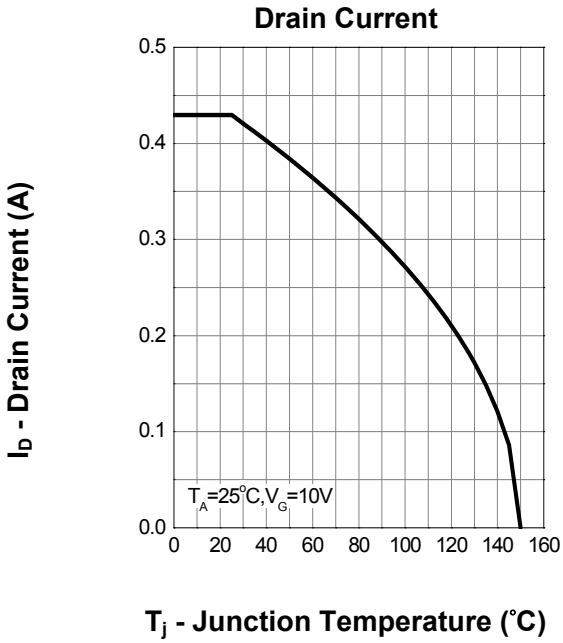
Notes:

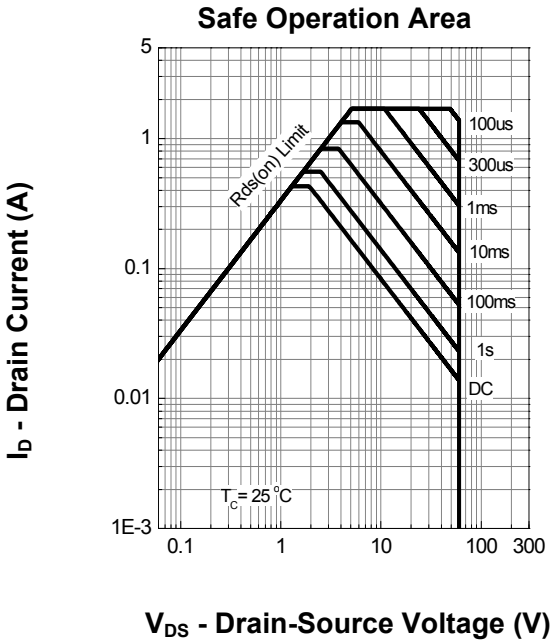
a) Pulse test ; pulse width ≤ 300 μs, duty cycle ≤ 2%

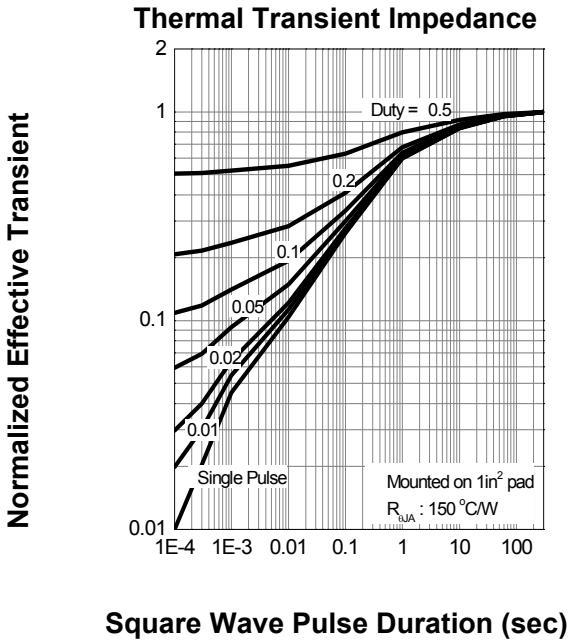
b) Guaranteed by design, not subject to production testing

Typcal Characteristics (cont.)



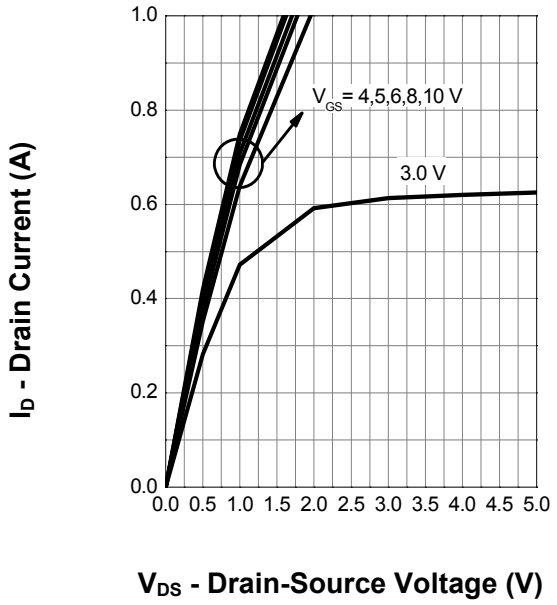




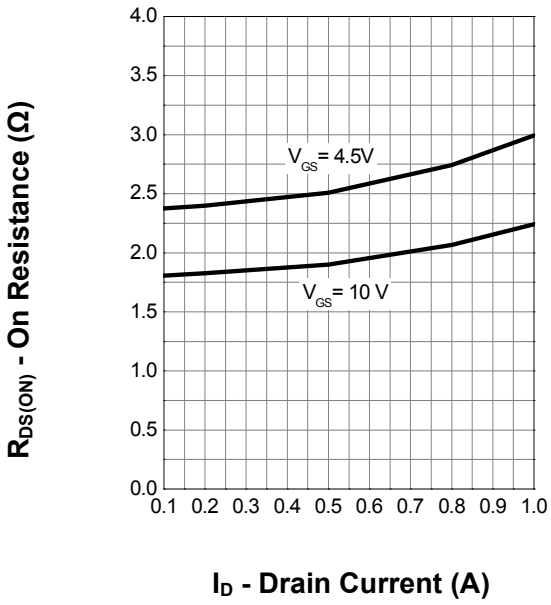


Typcal Characteristics (cont.)

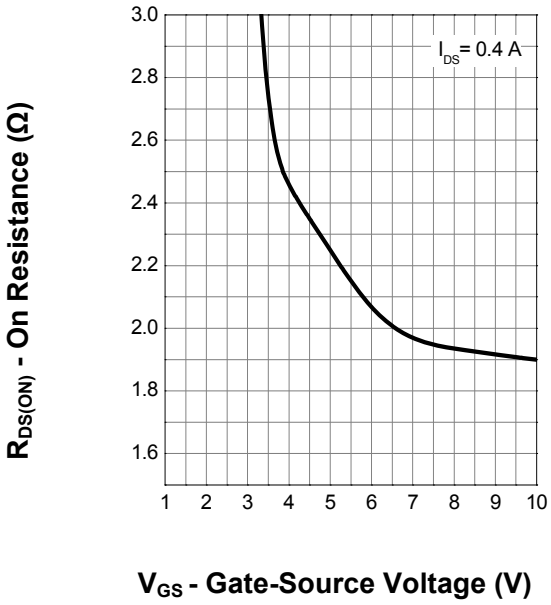
Output Characteristics



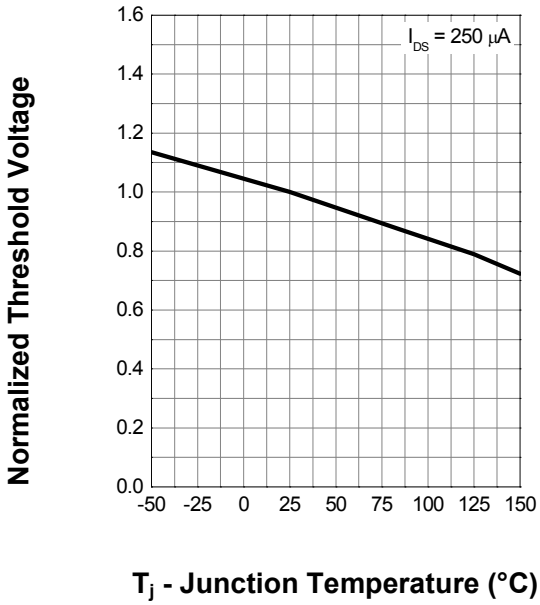
Drain-Source On Resistance



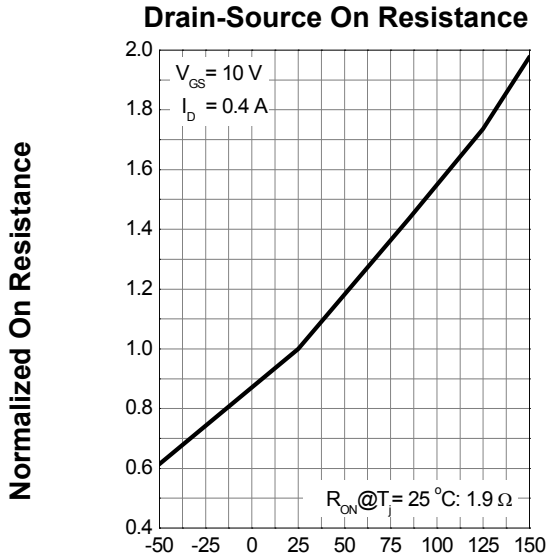
Transfer Characteristics

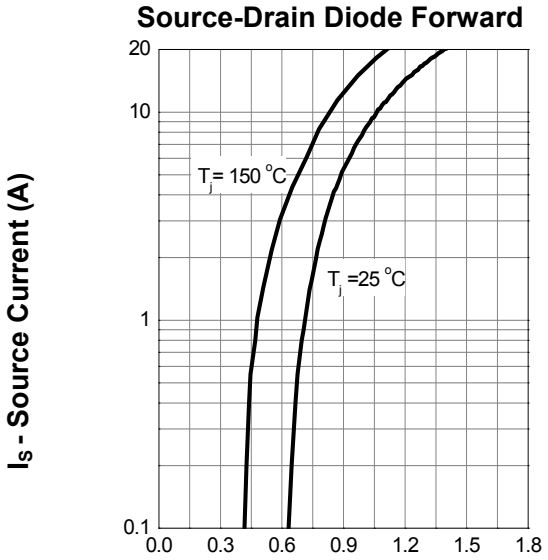


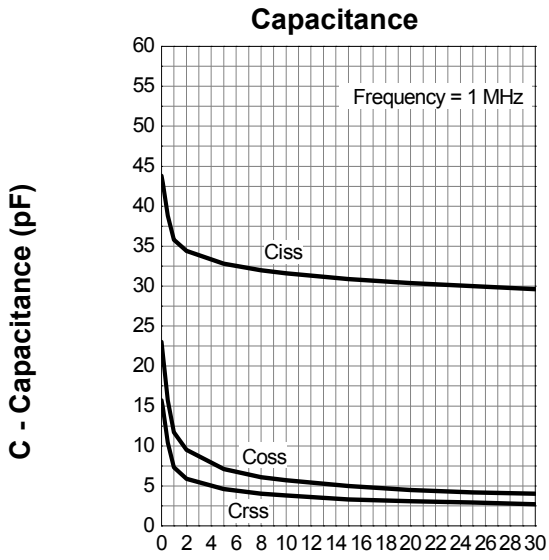
Gate Threshold Voltage

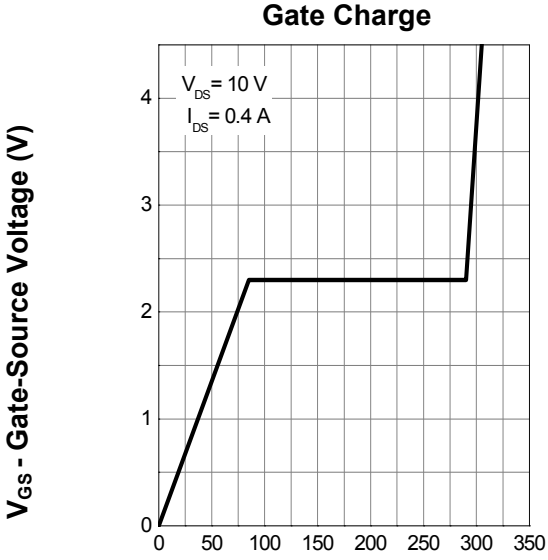


Typcal Characteristics (cont.)



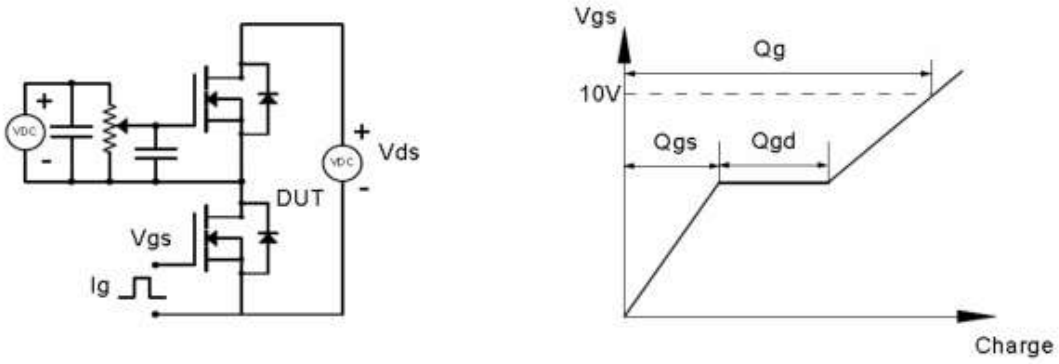




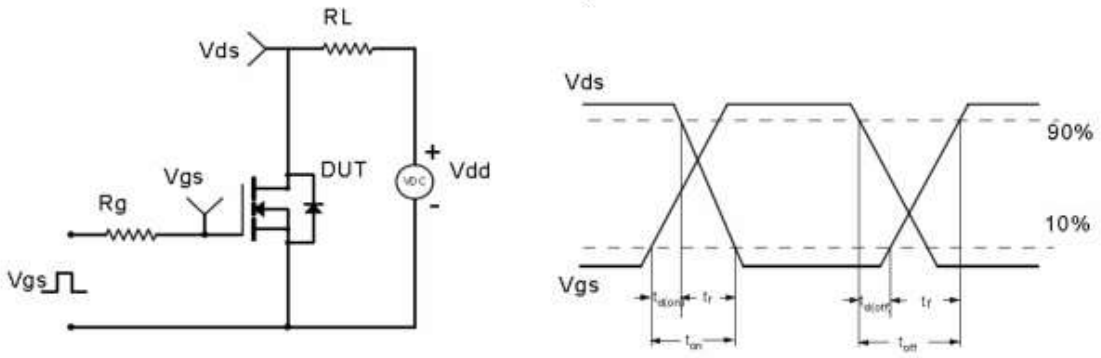


Test Circuit & Waveform

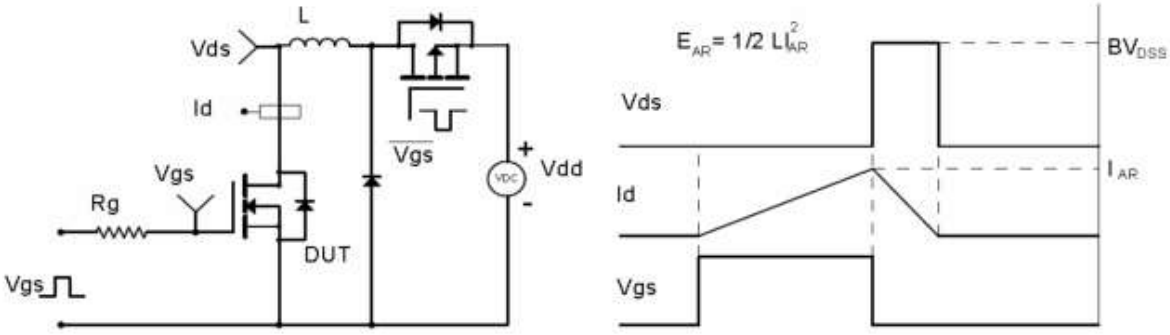
Gate Charge Test Circuit & Waveform



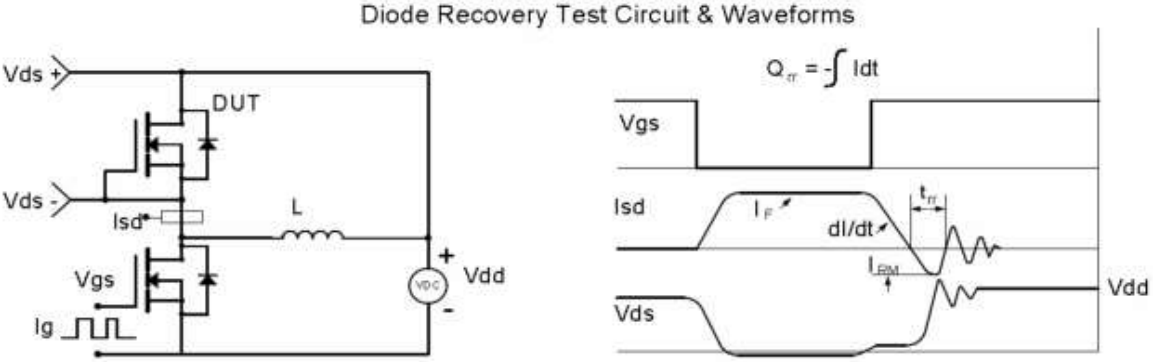
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

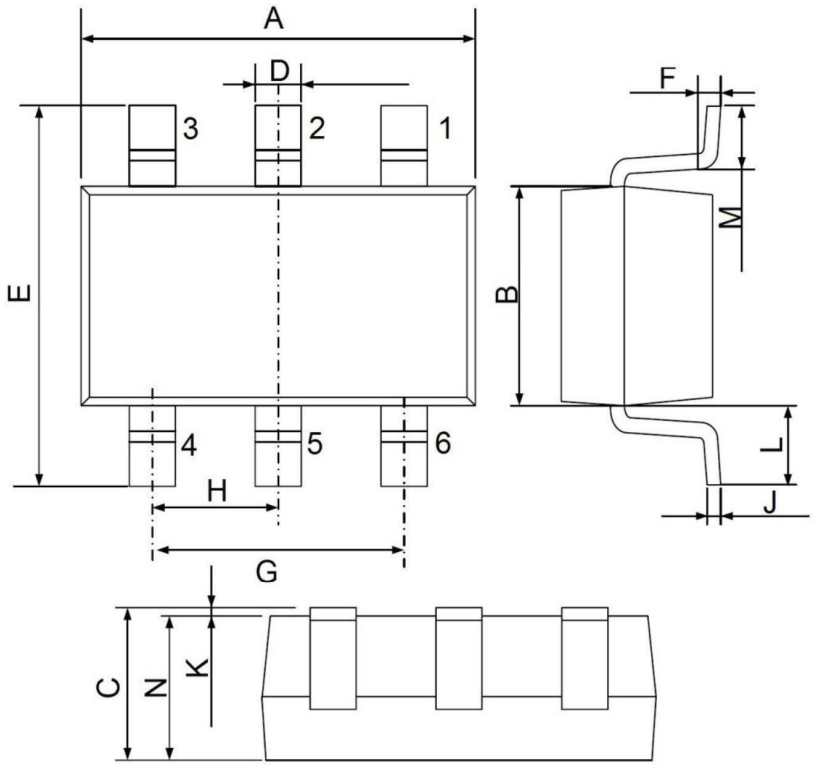


Diode Recovery Test Circuit & Waveforms



Package Dimensio

SOT-363-6L



UNIT: mm

DIM	MIN	MAX
A	2.00	2.20
B	1.15	1.35
C	0.90	1.10
D	0.15	0.35
E	1.95	2.25
F	0.20 Typ.	
G	1.20	1.40
H	0.65 Typ.	
J	0.08	0.15
K	0.00	0.10
L	0.525 Ref.	
M	0.26	0.46
N	0.90	1.10