Description

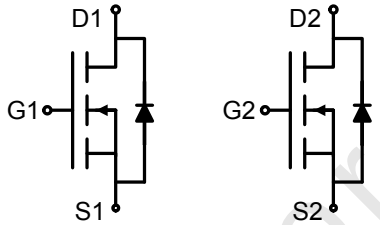
The JSM3622 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a Battery protection or in other switching application.

General Feature

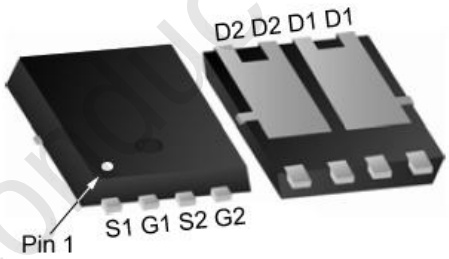
- V_{DS} =30V,I_D =25A
  $R_{DS(ON)\ Typ}$ =12mΩ @ V_{GS}=10V
  $R_{DS(ON)\ Typ}$ =16mΩ @ V_{GS}=4.5V
- High Power and current handing capability
- Lead free product is acquired
- Surface mount package

Application

- Battery switch
- DC/DC converter



Schematic diagram



PDFN3333-8 top view

Absolute Maximum Ratings (T_A=25℃unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous	I_D	25	A
Drain Current-Pulsed (Note 1)	I_{DM}	75	A
Maximum Power Dissipation	P_D	3.5	W
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55 To 150	℃

Thermal Characteristic

Thermal Resistance,Junction-to-Ambient (Note 2)	$R_{\theta JA}$	35	℃/W

Electrical Characteristics (T_A=25℃unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V,V_{GS}=0V	-	-	1	μA

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Parameter	Symbol	Condition	Min	Typ	Max	Unit
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	-	-	±100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	1.0	1.6	2.4	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=15A		12	14	mΩ
		V_{GS}=4.5V, I_D=10A		16	18	mΩ
Dynamic Characteristics (Note4)						
Input Capacitance	C_{Iss}	V_{DS}=15V,V_{GS}=0V, F=1.0MHz	-	564	-	PF
Output Capacitance	C_{oss}		-	75	-	PF
Reverse Transfer Capacitance	C_{rss}		-	66	-	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=30V,I_D=1.5A V_{GS}=10V,R_{GEN}=1Ω	-	9	-	nS
Turn-on Rise Time	t_r		-	10	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	15	-	nS
Turn-Off Fall Time	t_f		-	5	-	nS
Total Gate Charge	Q_g	V_{DS}=30V,I_D=15A, V_{GS}=10V	-	14.2	-	nC
Gate-Source Charge	Q_{gs}		-	1.5	-	nC
Gate-Drain Charge	Q_{gd}		-	3.6	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V_{SD}	V_{GS}=0V,I_S=15A			1.2	V
Diode Forward Current (Note 2)	I_S				25	A

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production

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Typical Electrical and Thermal Characteristics

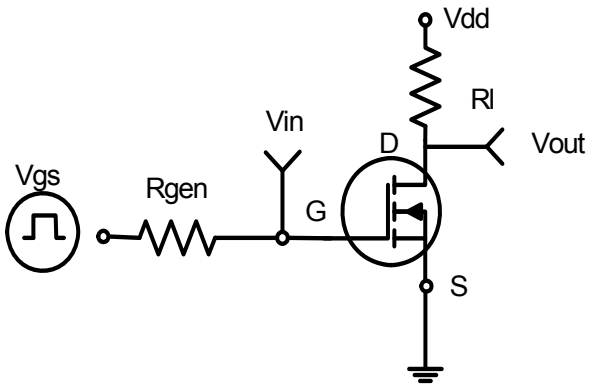

Figure 1 Switching Test Circuit

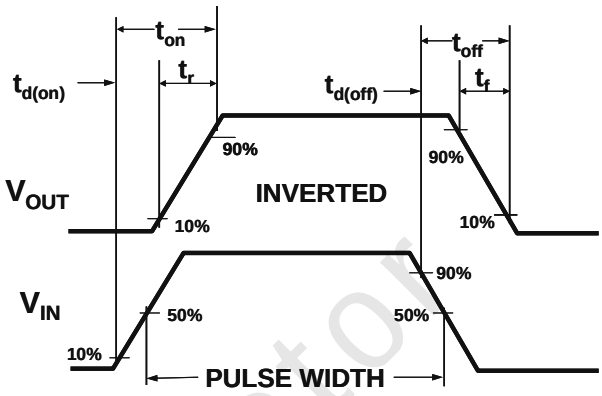

Figure 2 Switching Waveforms

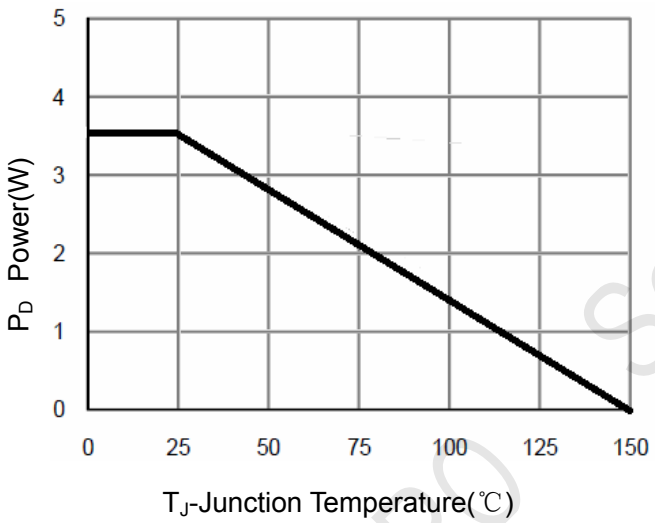

Figure 3 Power Dissipation

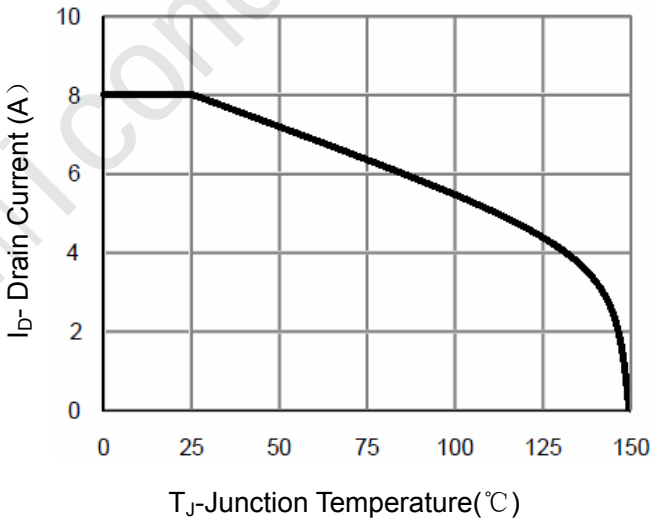

Figure 4 Drain Current

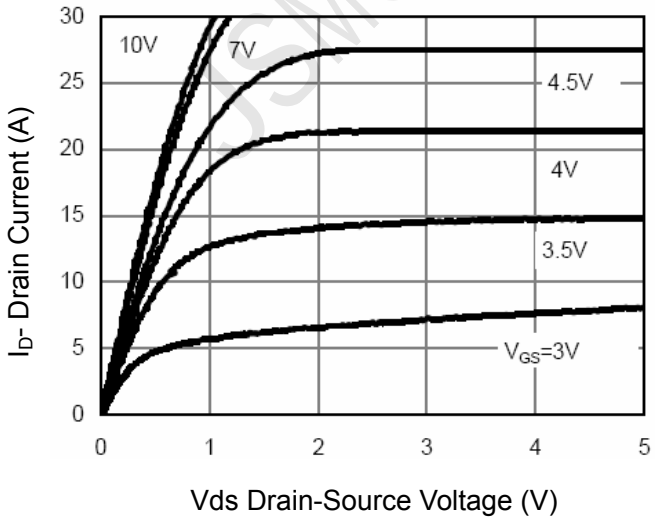

Figure 5 Output Characteristics

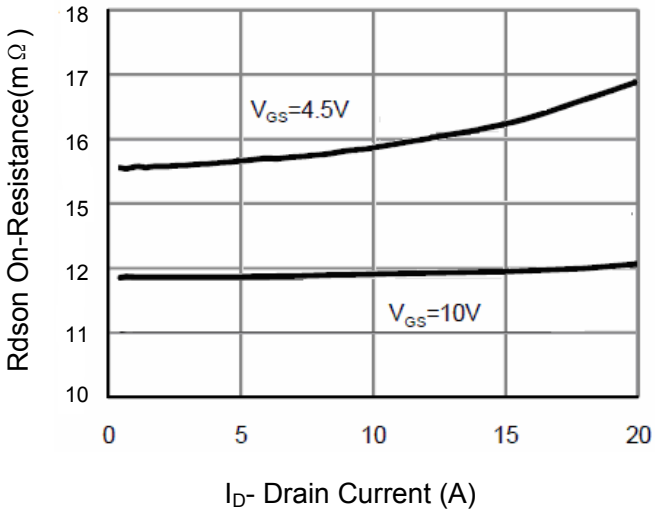

Figure 6 Drain-Source On-Resistance

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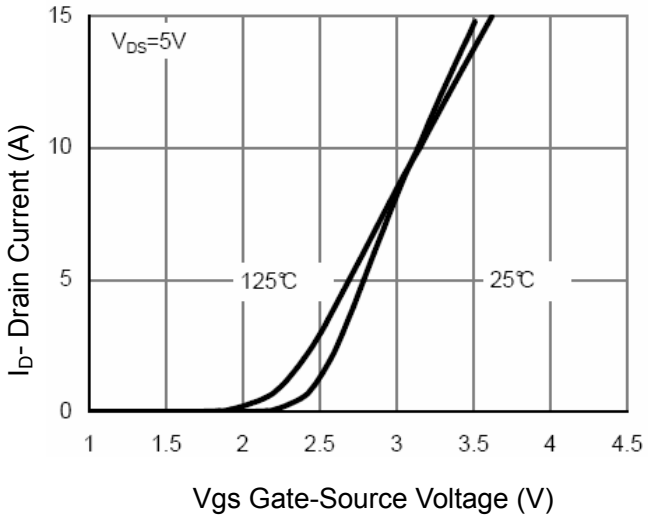

Figure 7 Transfer Characteristics

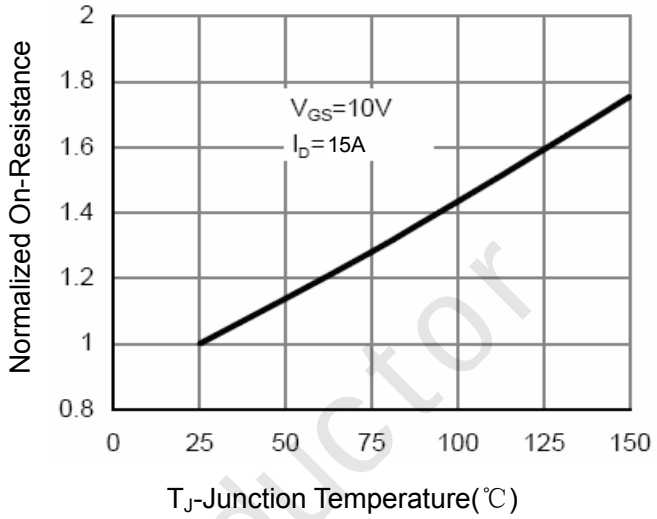

Figure 8 Drain-Source On-Resistance

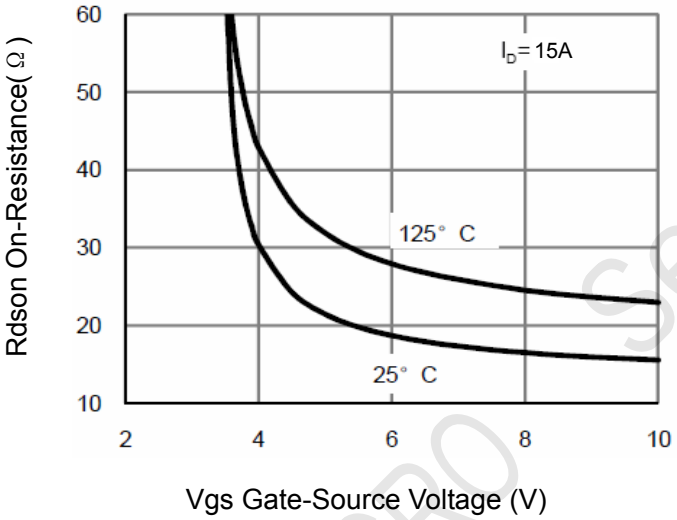

Figure 9 Rdson vs Vgs

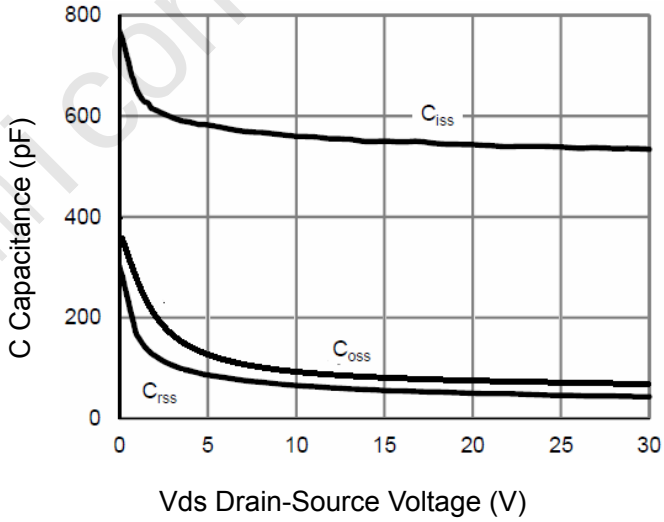

Figure 10 Capacitance vs Vds

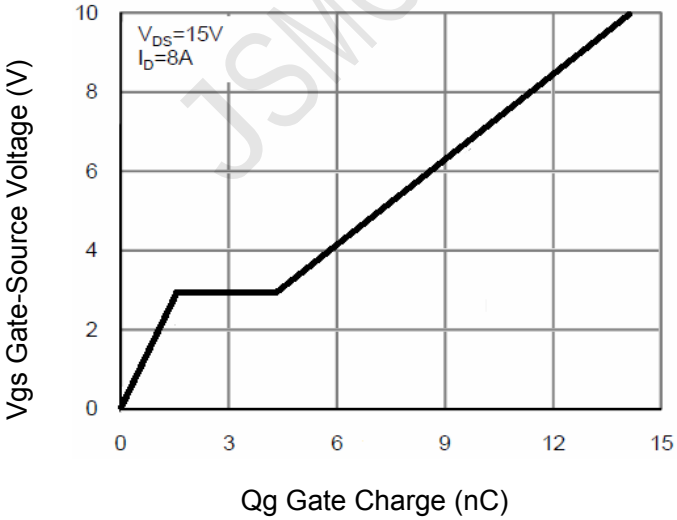

Figure 11 Gate Charge

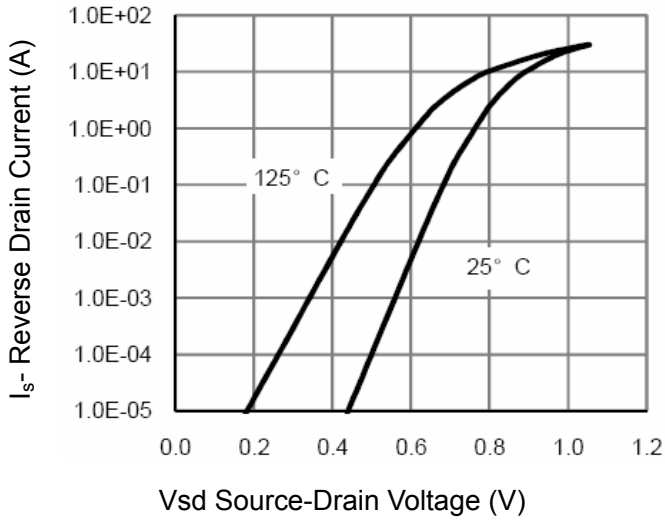

Figure 12 Source- Drain Diode Forward

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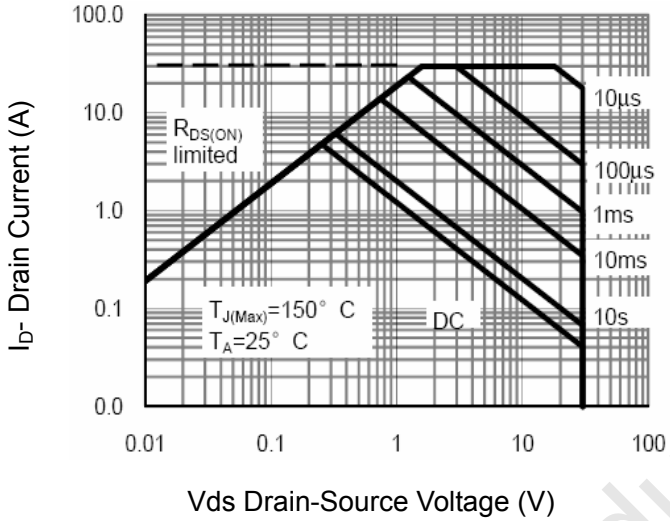

Figure 13 Safe Operation Area

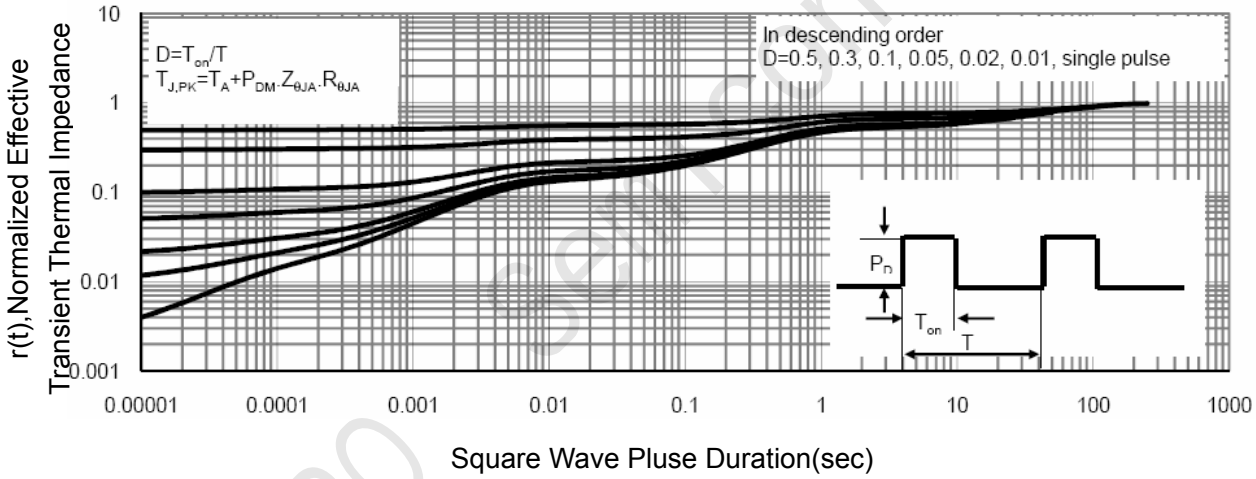

Figure 14 Normalized Maximum Transient Thermal Impedance

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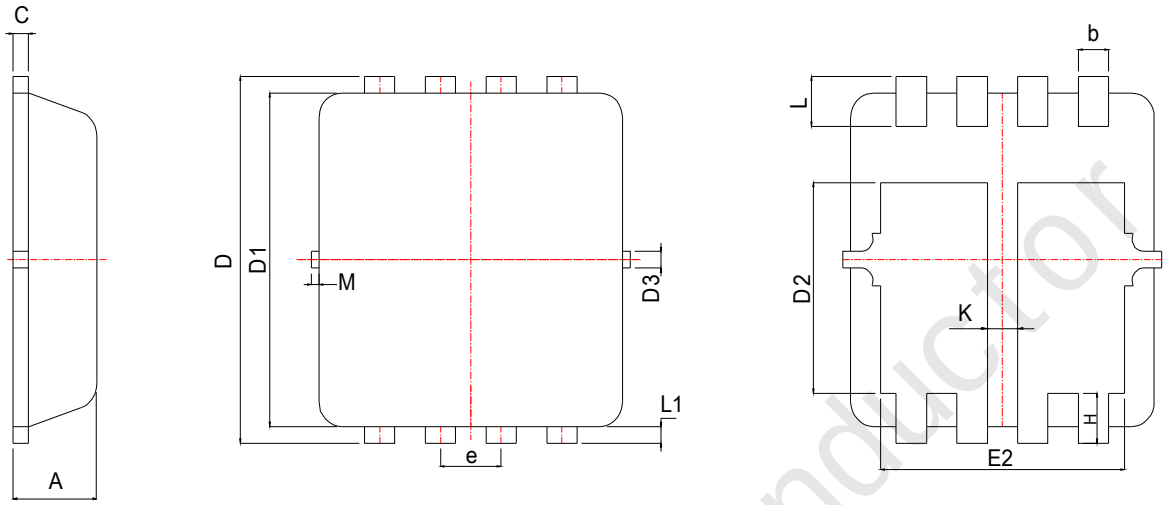
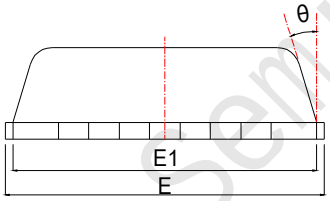
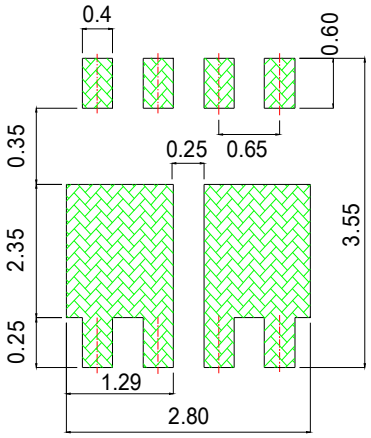




Land Pattern
(Only for Reference)



SYMBOL	MM			INCH			SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX		MIN	NOM	MAX	MIN	NOM	MAX
A	0.70	0.75	0.80	0.028	0.030	0.031	E1	3.00	3.15	3.20	0.118	0.122	0.126
b	0.25	0.30	0.35	0.010	0.012	0.014	E2	2.39	2.49	2.59	0.094	0.098	0.102
c	0.10	0.15	0.25	0.004	0.007	0.010	e	0.65BSC			0.026BSC		
D	3.25	3.35	3.45	0.128	0.132	0.136	H	0.30	0.40	0.50	0.012	0.016	0.020
D1	3.00	3.10	3.20	0.118	0.122	0.126	L	0.30	0.40	0.50	0.012	0.016	0.020
D2	1.78	1.88	1.98	0.070	0.074	0.078	L1	*	0.13	*	*	0.005	*
D3	*	0.13	*	*	0.005	*	θ	*	10°	12°	*	10°	12°
E	3.20	3.30	3.40	0.126	0.130	0.134	M	*	*	0.15	*	*	0.006
K	0.30	*	*	0.012	*	*							

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