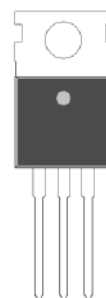


N-Channel Enhancement Mode Power MOSFET

Features:

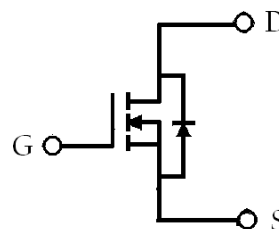
- Low On Resistance
- Low Gate Charge
- Fast Switching Characteristic
- RoHS compliant package

TO-220



G D S

BV_{DSS}	100V
$I_D @ V_{GS}=10V, T_c=25^\circ C$ (silicon limit)	185A
$I_D @ V_{GS}=10V, T_c=25^\circ C$ (package limit)	130A
$I_D @ V_{GS}=10V, T_A=25^\circ C$	30A
$R_{DS(on)(typ)} @ V_{GS}=10V, I_D=30A$	2.4 m Ω



G : Gate D : Drain S : Source

Ordering Information

Device	Package	Shipping
KE2D0N10R	TO-220 (RoHS compliant)	50 pcs/tube, 20 tubes/box, 4 boxes / carton

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit	
Drain-Source Voltage	V _{DS}	100	V	
Gate-Source Voltage	V _{GS}	±20		
Continuous Drain Current @ T _C =25°C, V _{GS} =10V(silicon limit)	I _D	185 *1	A	
Continuous Drain Current @ T _C =100°C, V _{GS} =10V(silicon limit)		130 *1		
Continuous Drain Current @ T _C =25°C, V _{GS} =10V(package limit)		130		
Continuous Drain Current @ T _A =25°C, V _{GS} =10V		30 *2		
Continuous Drain Current @ T _A =70°C, V _{GS} =10V		25 *2		
Pulsed Drain Current		I _{DM}		520 *3
Avalanche Current @ L=0.1mH	I _{AS}	30		
Avalanche Energy @ L=0.5mH	E _{AS}	72	mJ	
Total Power Dissipation	P _D	T _C =25°C	180 *1	W
		T _C =100°C	90 *1	
	P _{DSM}	T _A =25°C	5 *2, 4	
		T _A =70°C	3.5 *2, 4	
Operating Junction and Storage Temperature Range	T _j , T _{stg}	-55~+175	°C	

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	R _{θJC}	0.83	°C/W
Thermal Resistance, Junction-to-ambient, max (Note 2)	R _{θJA}	30 *4	

- Note : 1. The power dissipation P_D is based on T_{J(MAX)}=175 °C, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heatsinking is used.
2. The value of R_{θJA} is measured with the device mounted on 1 in²FR-4 board with 2 oz. copper, in a still air environment with T_A=25 °C. The value in any given application depends on the user's specific board design. The power dissipation P_{DSM} is based on R_{θJA} and the maximum allowed junction temperature of 150 °C.
3. Ratings are based on low frequency and low duty cycles to keep initial T_J=25 °C.
4. When mounted on 1 in² copper pad of FR-4 board ; 125°C/W when mounted on minimum copper pad.

Characteristics (Tc=25°C, unless otherwise specified)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV _{DSS}	100	-	-	V	V _{GS} =0V, I _D =250μA
V _{GS(th)}	2	-	4		V _{DS} =V _{GS} , I _D =250μA
G _{FS} *1	-	52.3	-	S	V _{DS} =5V, I _D =20A
I _{GSS}	-	-	±100	nA	V _{GS} =±20V, V _{DS} =0V
I _{DSS}	-	-	1	μA	V _{DS} =80V, V _{GS} =0V
	-	-	10		V _{DS} =80V, V _{GS} =0V, T _J =85°C
R _{DS(ON)} *1	-	2.4	3	mΩ	V _{GS} =10V, I _D =30A
Dynamic					
C _{iss}	-	8100	-	pF	V _{DS} =50V, V _{GS} =0V, f=1MHz
C _{oss}	-	1230	-		
C _{rss}	-	45	-		
Q _g *1, 2	-	125	-	nC	V _{DS} =80V, I _D =30A, V _{GS} =10V
Q _{gs} *1, 2	-	35	-		
Q _{gd} *1, 2	-	30	-		
t _{d(ON)} *1, 2	-	45	-	ns	V _{DS} =50V, I _D =30A, V _{GS} =10V, R _{GS} =1Ω
t _r *1, 2	-	30	-		
t _{d(OFF)} *1, 2	-	88	-		
t _f *1, 2	-	27	-		
R _g	-	1.0	-	Ω	f=1MHz
Source-Drain Diode					
I _S *1	-	-	30	A	
I _{SM} *3	-	-	120		
V _{SD} *1	-	0.8	1.2	V	I _S =30A, V _{GS} =0V
t _{rr}	-	75	-	ns	I _F =30A, dI _F /dt=100A/μs
Q _{rr}	-	150	-	nC	

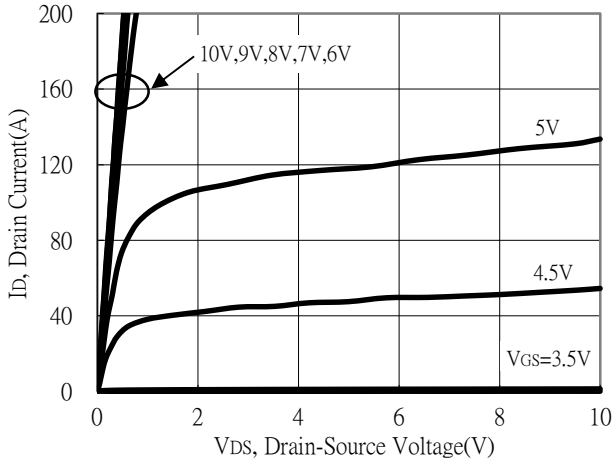
Note : *1.Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

*2.Independent of operating temperature

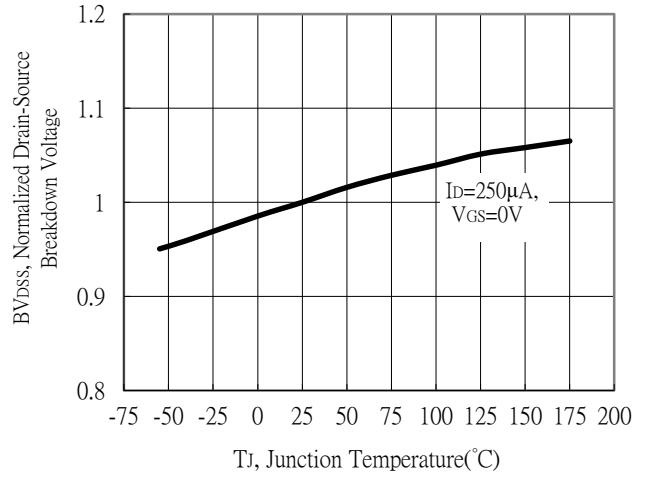
*3.Pulse width limited by maximum junction temperature.

Typical Characteristics

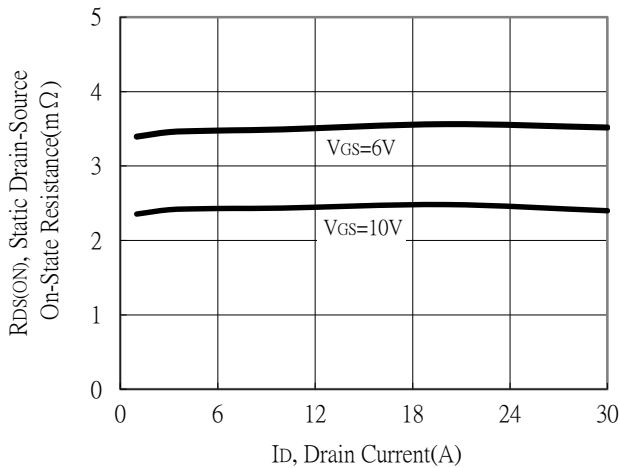
Typical Output Characteristics



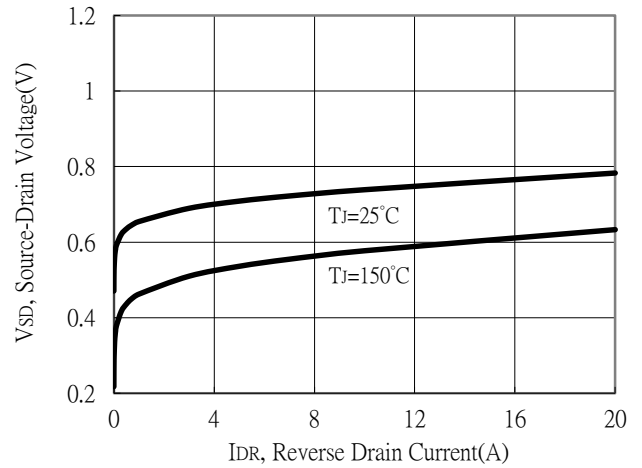
Breakdown Voltage vs Ambient Temperature



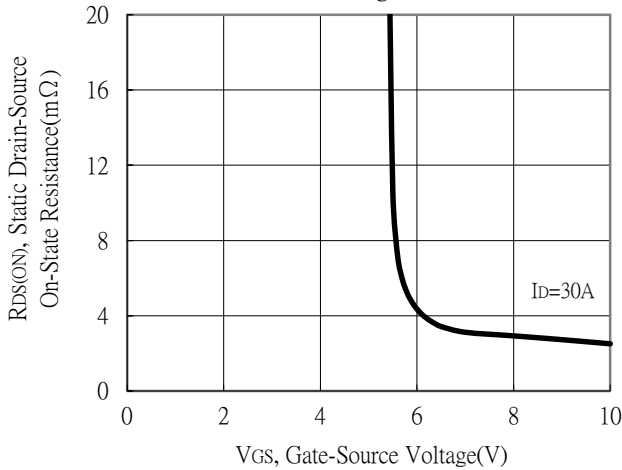
Static Drain-Source On-State resistance vs Drain Current



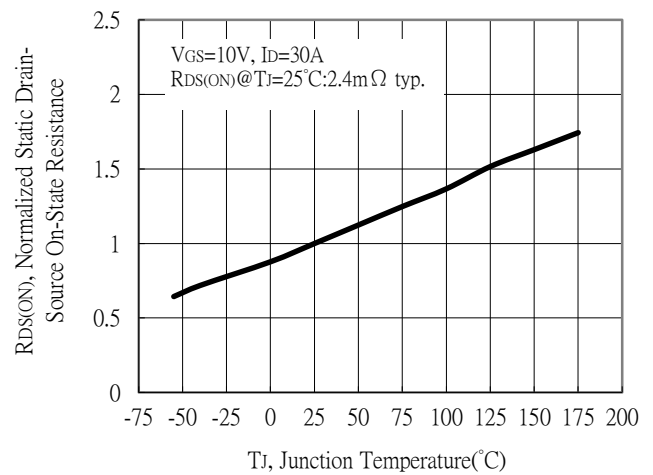
Reverse Drain Current vs Source-Drain Voltage



Static Drain-Source On-State Resistance vs Gate-Source Voltage

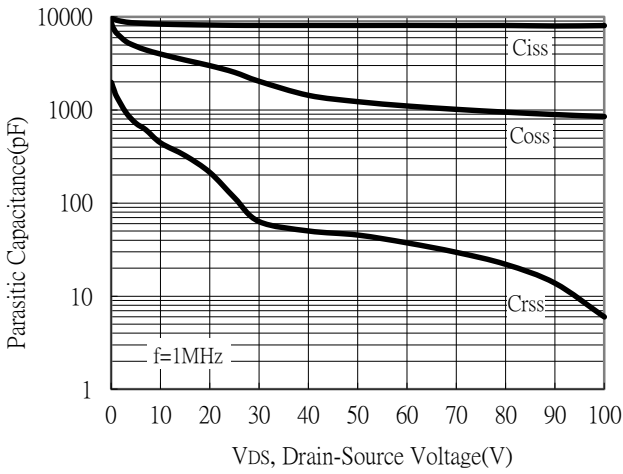


Drain-Source On-State Resistance vs Junction Temperature

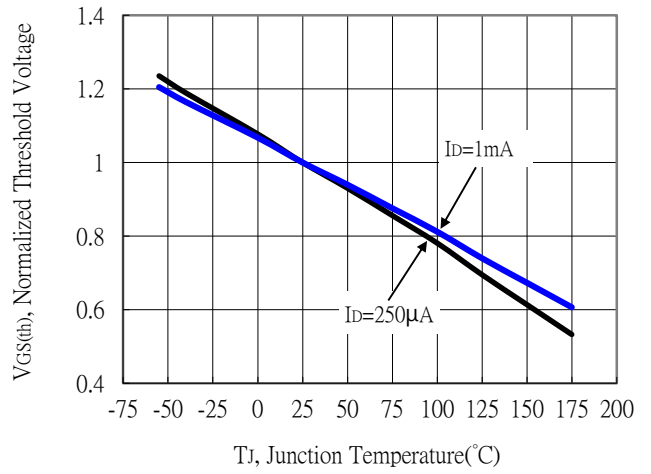


Typical Characteristics(Cont.)

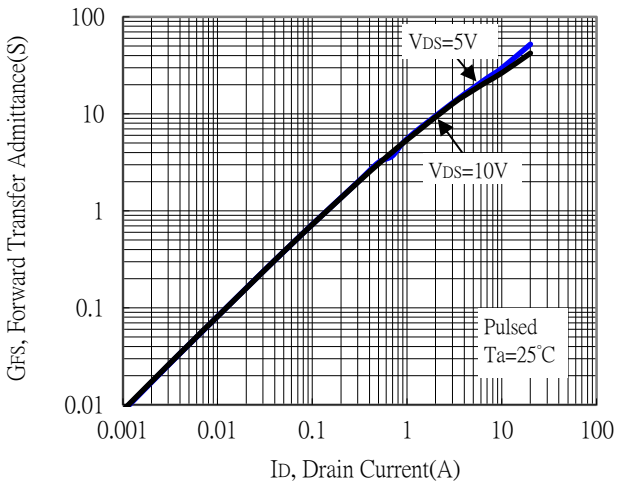
Capacitance vs Drain-to-Source Voltage



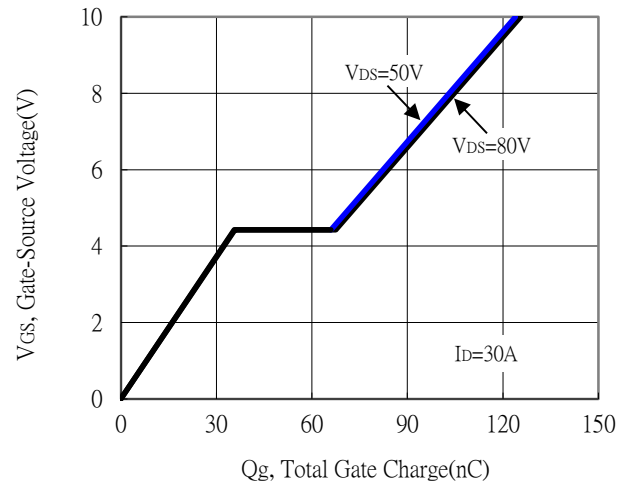
Threshold Voltage vs Junction Temperature



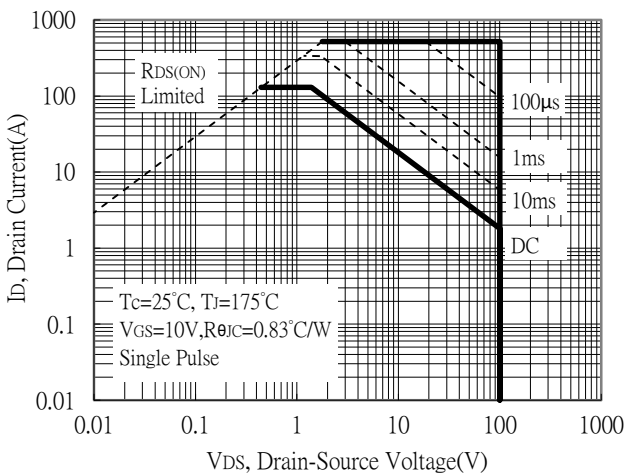
Forward Transfer Admittance vs Drain Current



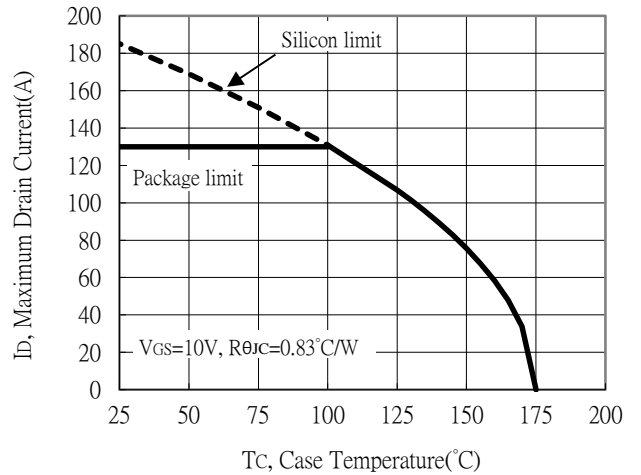
Gate Charge Characteristics



Maximum Safe Operating Area

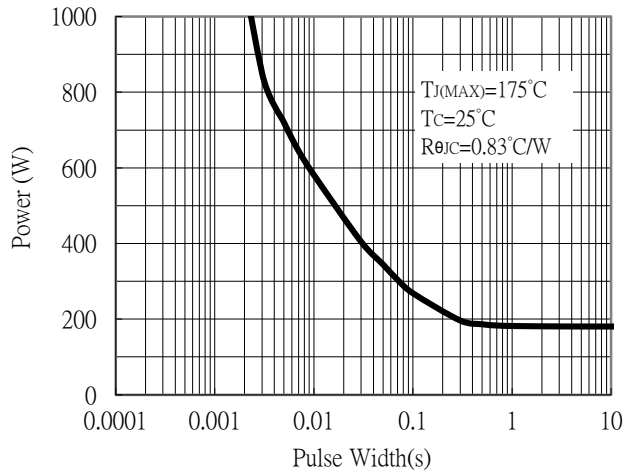


Maximum Drain Current vs Case Temperature

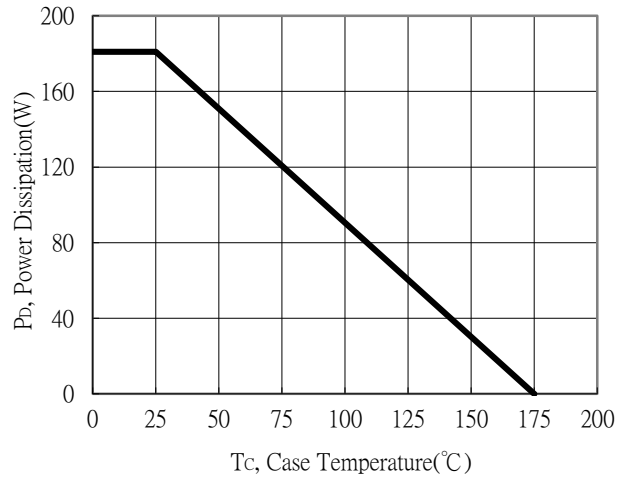


Typical Characteristics(Cont.)

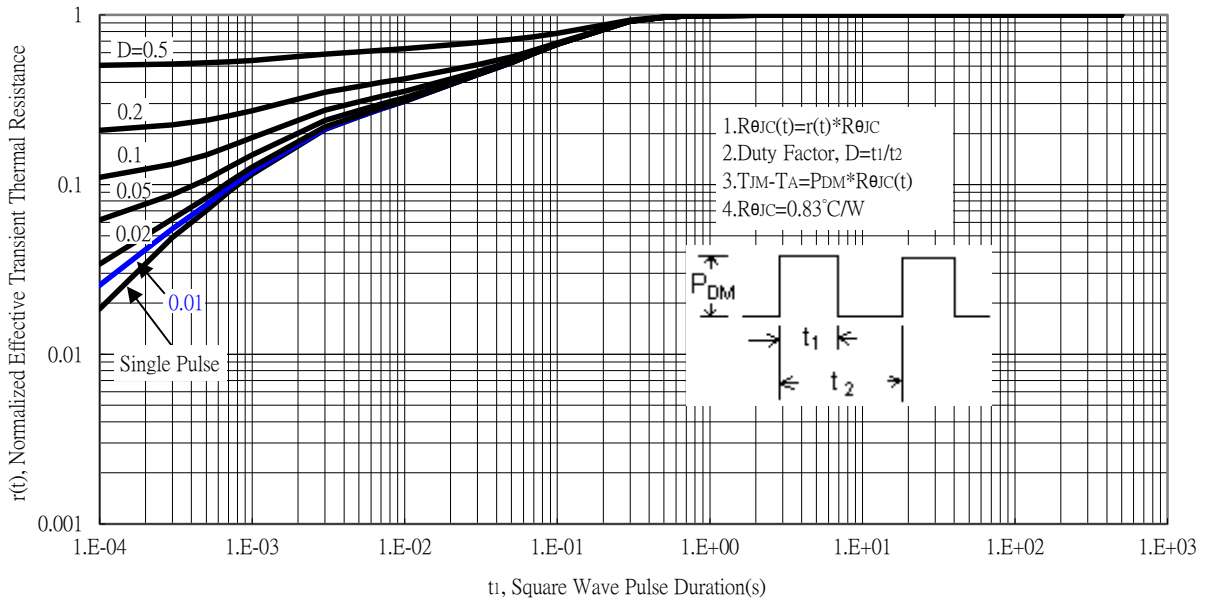
Single Pulse Maximum Power Dissipation

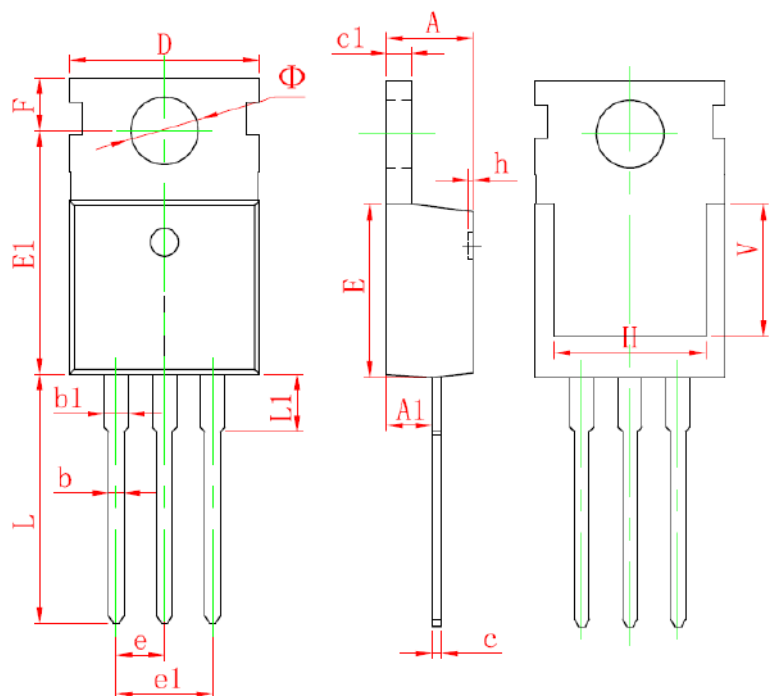


Power Derating Curve



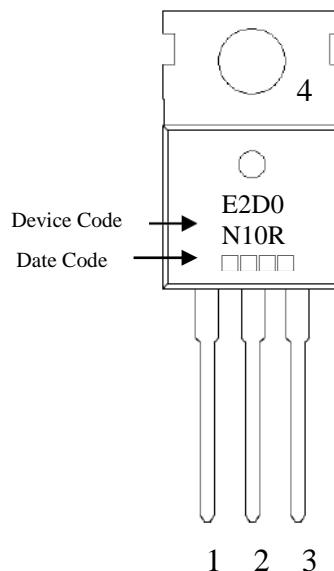
Transient Thermal Response Curves





3-Lead TO-220 Plastic Package

Marking:



Style: Pin 1.Gate 2.Drain 3.Source
 4.Drain

*: Typical

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	4.400	4.600	0.173	0.181	e	2.540*		0.100*	
A1	2.250	2.550	0.089	0.100	e1	4.980	5.180	0.196	0.204
b	0.710	0.910	0.028	0.036	F	2.650	2.950	0.104	0.116
b1	1.170	1.370	0.046	0.054	H	7.900	8.100	0.311	0.319
c	0.330	0.650	0.013	0.026	h	0.000	0.300	0.000	0.012
c1	1.200	1.400	0.047	0.055	L	12.900	13.400	0.508	0.528
D	9.910	10.250	0.390	0.404	L1	2.850	3.250	0.112	0.128
E	8.950	9.750	0.352	0.384	V	7.500	REF	0.295	REF
E1	12.650	12.950	0.498	0.510	Φ	3.400	3.800	0.134	0.150