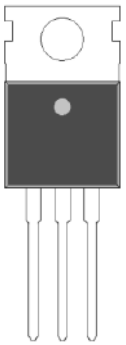
N-Channel Enhancement Mode Power MOSFET

Description :

The KE3607 is a N-channel enhancement-mode MOSFET, providing the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost effectiveness. The TO-220 package is universally preferred for all commercial-industrial applications

BV_{DSS} : 75V
$R_{DS(ON)}$: 6 mΩ(typ.)
I_D :80A

TO-220



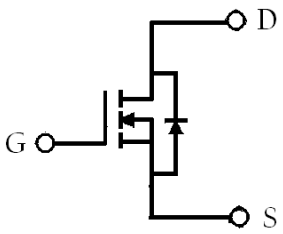
G D S

Features:

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

Applications :

- Switching Mode Power Supply
- Uninterruptible Power Supply
- High Speed Power Switching
- Hard Switched and High Frequency Circuits



G：Gate
D：Drain
S：Source

Ordering Information

Device	Package	Shipping
KE3607	TO-220 (RoHS compliant package)	50 pcs/tube, 20 tubes/box, 4 boxes / carton

Absolute Maximum Ratings (T_C=25°C)

Parameter	Symbol	Limits	Unit
Drain-Source Voltage (Note 1)	V_{DS}	75	V
Gate-Source Voltage	V_{GS}	±20	
Continuous Drain Current @V_{GS}=10V, T_C=25°C (silicon limit)	I_D	122*	A
Continuous Drain Current @V_{GS}=10V, T_C=25°C (package limit)		80*	
Continuous Drain Current @ V_{GS}=10V, T_C=100°C(silicon limit)		86*	
Pulsed Drain Current @ V_{GS}=10V (Note 2)	I_{DM}	320*	
Single Pulse Avalanche Energy (Note 3)	E_{AS}	450	mJ
Single Pulse Avalanche Current @ L=0.1mH (Note 3)	I_{AS}	50	A
Repetitive Avalanche Energy (Note 2)	E_{AR}	23	mJ
ESD susceptibility (Note 4)	V_{ESD}	1500	V
Maximum Temperature for Soldering @ Lead at 0.125in(3.175mm) from case for 10 seconds	T_L	300	°C
Total Power Dissipation (T_C=25℃)	P_D	230	W
Linear Derating Factor above 25℃		1.53	W/°C
Operating Junction and Storage Temperature	Tj, Tstg	-55~+175	°C

*Calculated continuous drain current based on maximum allowable junction temperature.

Note : 1. T_J=+25℃ to +150℃.
2. Repetitive rating; pulse width limited by maximum junction temperature.
3. I_{AS}=30A, V_{DD}=25V, L=1mH, R_G=25Ω, starting T_J=+25℃.
4. Human body model, 1.5kΩ in series with 100pF.

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	$R_{\theta JC}$	0.65	°C/W
Thermal Resistance, Junction-to-ambient, max	$R_{\theta JA}$	62	

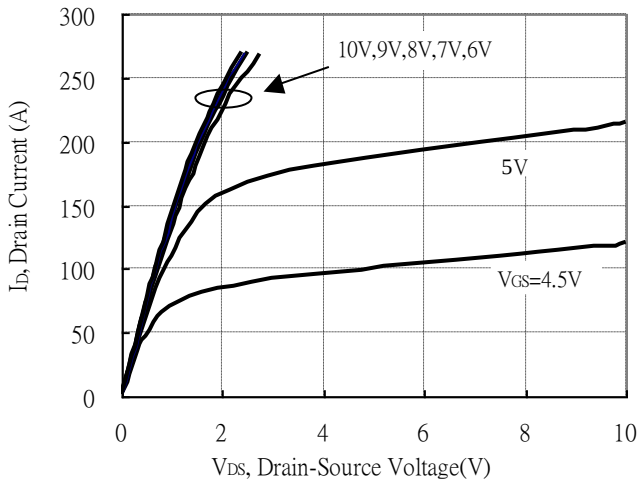
Characteristics (Tj=25°C, unless otherwise specified)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV_{DSS}	75	-	-	V	V_{GS}=0V, I_D=250μA
$V_{GS(th)}$	2.0	-	4.0		V_{DS} = V_{GS}, I_D=250μA
*G_{FS}	-	26.4	-	S	V_{DS} =10V, I_D=20A
I_{GSS}	-	-	±100	nA	V_{GS}=±20V, V_{DS}=0V
I_{DSS}	-	-	1	μA	V_{DS} =60V, V_{GS} =0V
	-	-	10		V_{DS} =50V, V_{GS} =0V, Tj=125°C
*$R_{DS(ON)}$	-	6	8	mΩ	V_{GS} =10V, I_D=37.5A
Dynamic					
*Qg	-	78.8	-	nC	I_D=37.5A, V_{DD}=38V, V_{GS}=10V
*Qgs	-	15.7	-		
*Qgd	-	22.4	-		
*$t_{d(ON)}$	-	30.2	-	ns	V_{DD}=38V, I_D=75A, V_{GS}=10V, R_G=3.3Ω
*tr	-	9.2	-		
*$t_{d(OFF)}$	-	67.8	-		
*t_f	-	13.8	-		
Ciss	-	3944	-	pF	V_{GS}=0V, V_{DS}=25V, f=1MHz
Coss	-	365	-		
Crss	-	208	-		
Rg	-	0.9	-	Ω	f=1MHz
Source-Drain Diode					
*I_S	-	-	80	A	
*I_{SM}	-	-	320		
*V_{SD}	-	0.85	1.5	V	I_S=37.5A, V_{GS}=0V
*trr	-	22.4	-	ns	V_{GS}=0, I_F=75A, dI_F/dt=100A/μs
*Qrr	-	17.5	-	nC	

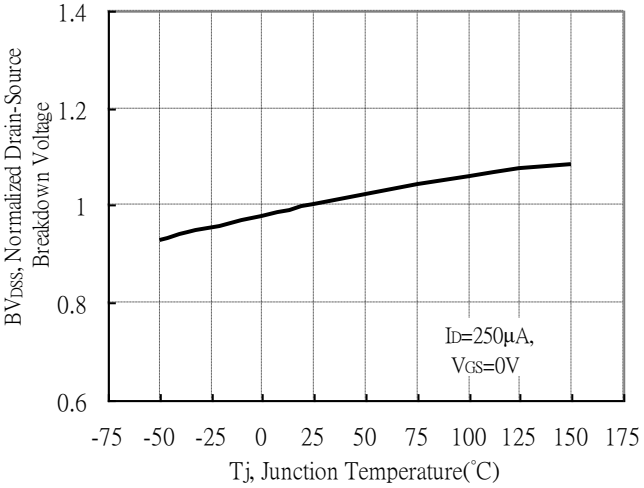
*Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

Typical Characteristics

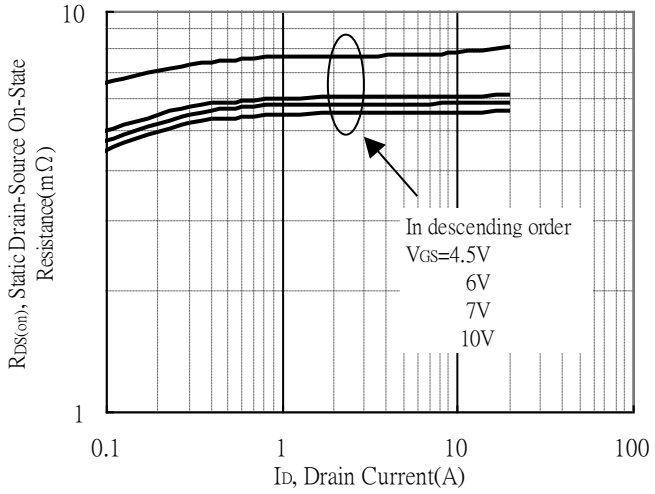
Typical Output Characteristics



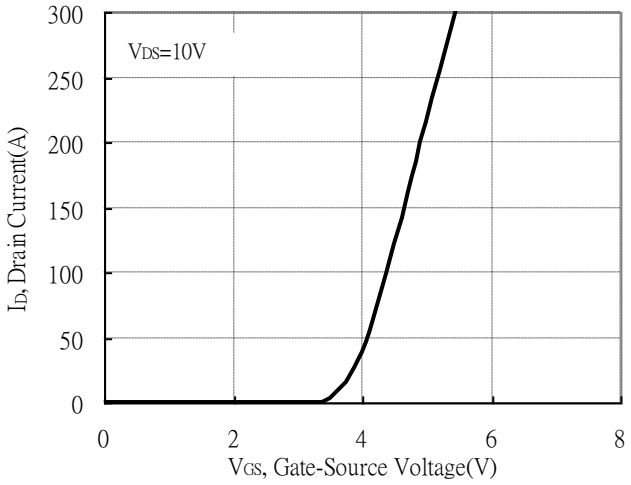
Brekdown Voltage vs Ambient Temperature



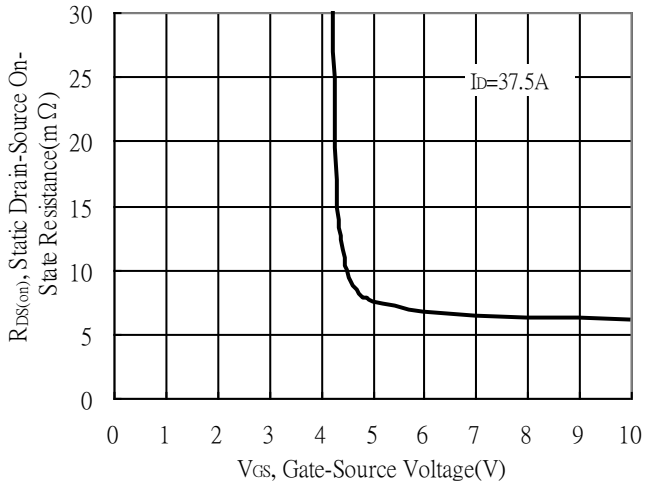
Static Drain-Source On-State resistance vs Drain Current



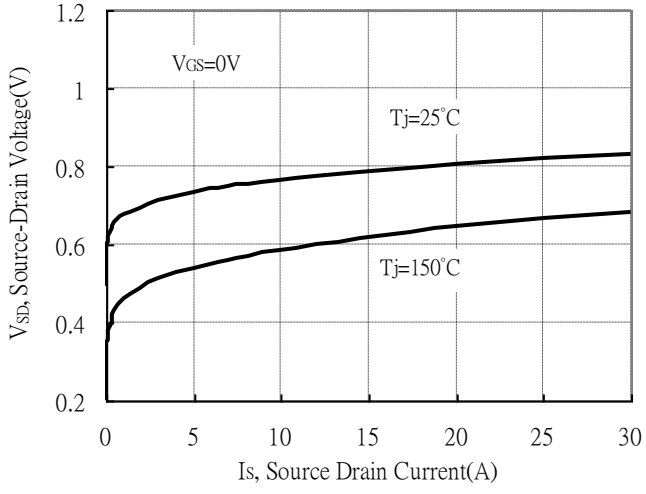
Typical Transfer Characteristics



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

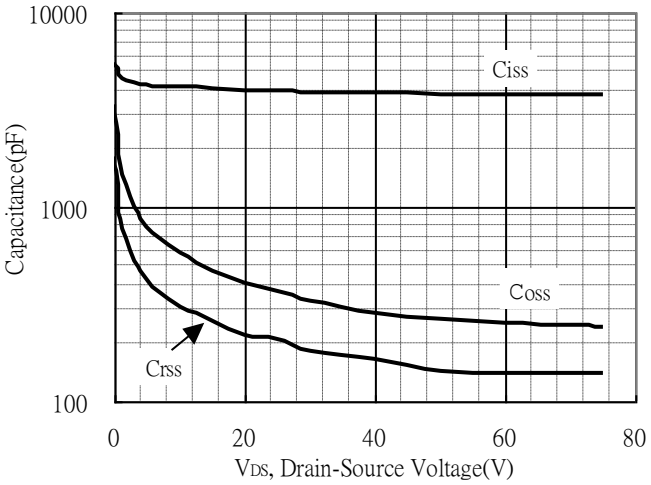


Source Drain Current vs Source-Drain Voltage

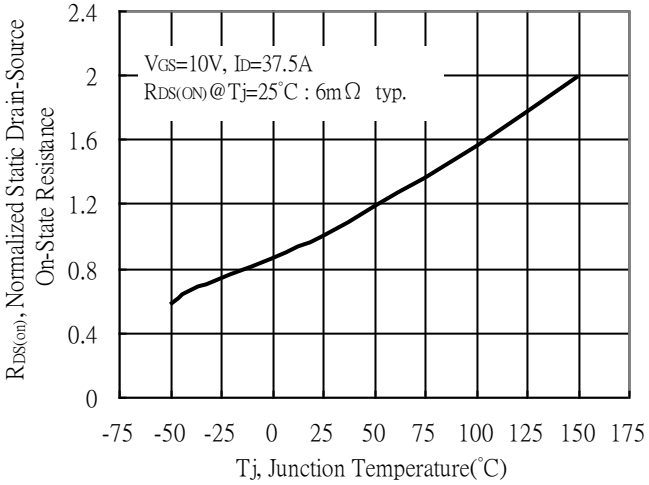


Typical Characteristics(Cont.)

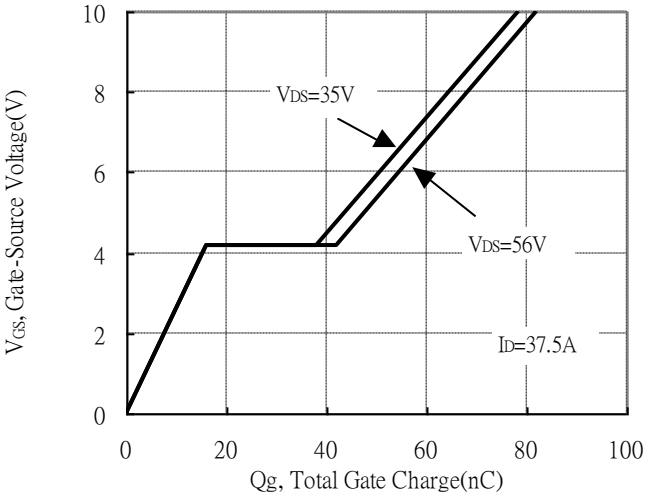
Capacitance vs Drain-to-Source Voltage



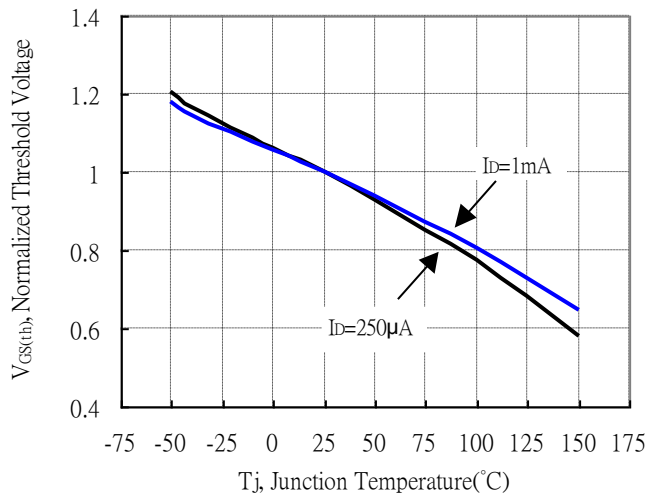
Drain-Source On-State Resistance vs Junction Tempearture



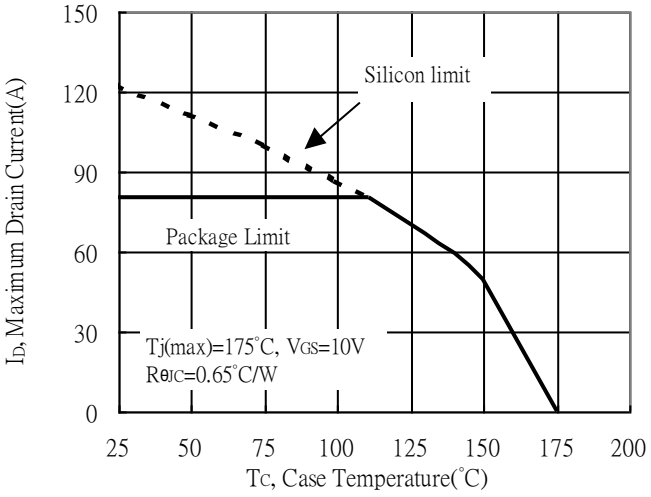
Gate Charge Characteristics



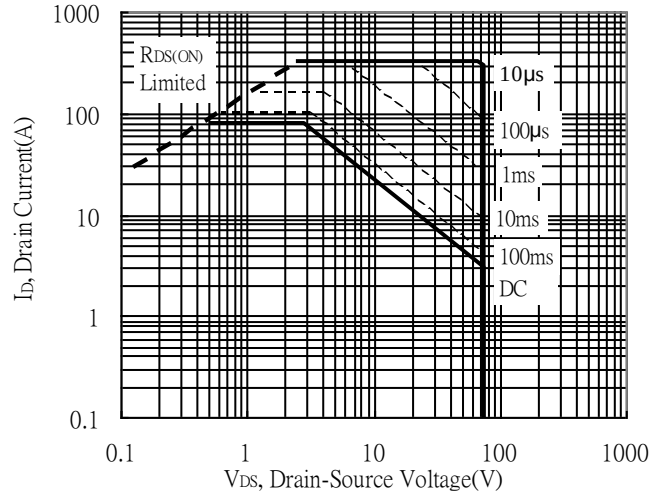
Threshold Voltage vs Junction Tempearture



Maximum Drain Current vs Case Temperature

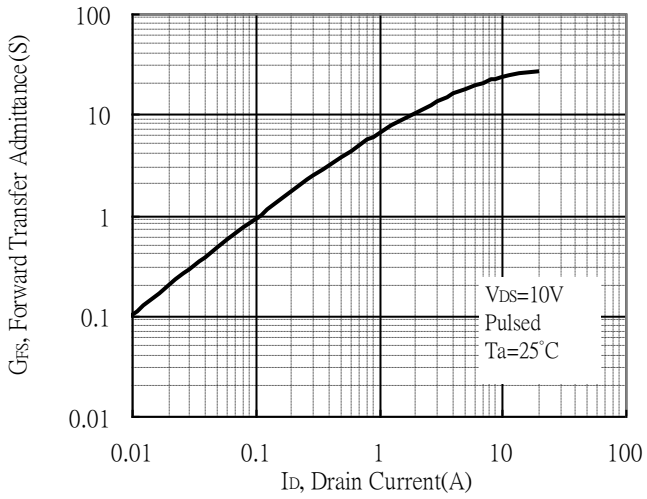


Maximum Safe Operating Area

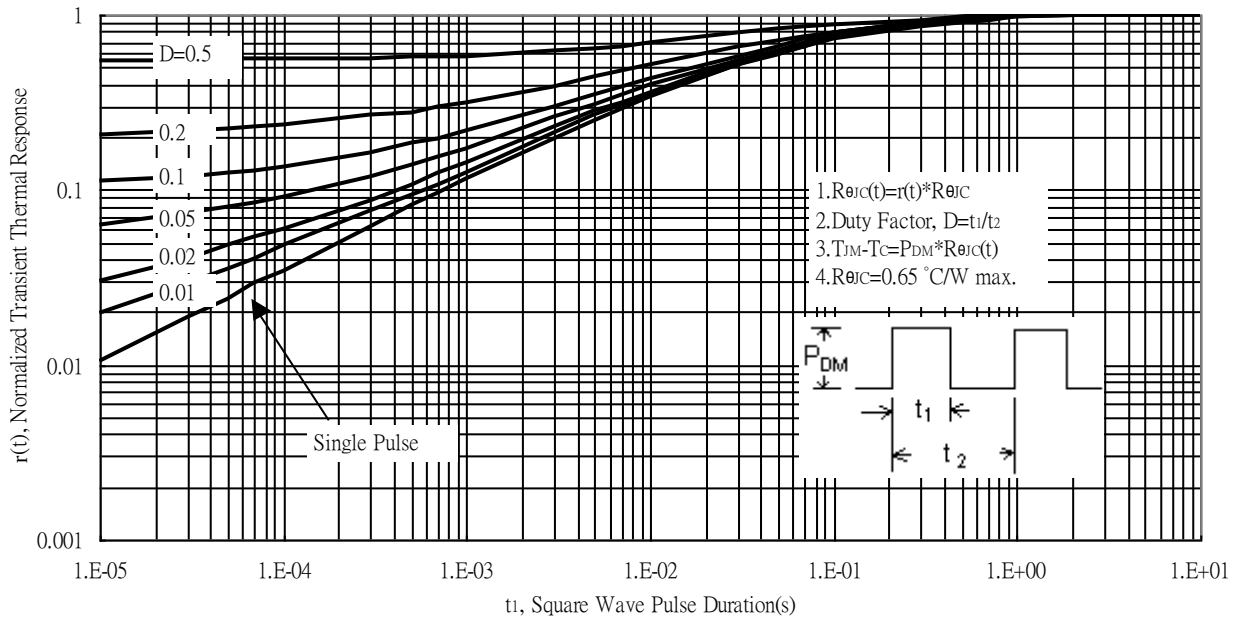


Typical Characteristics(Cont.)

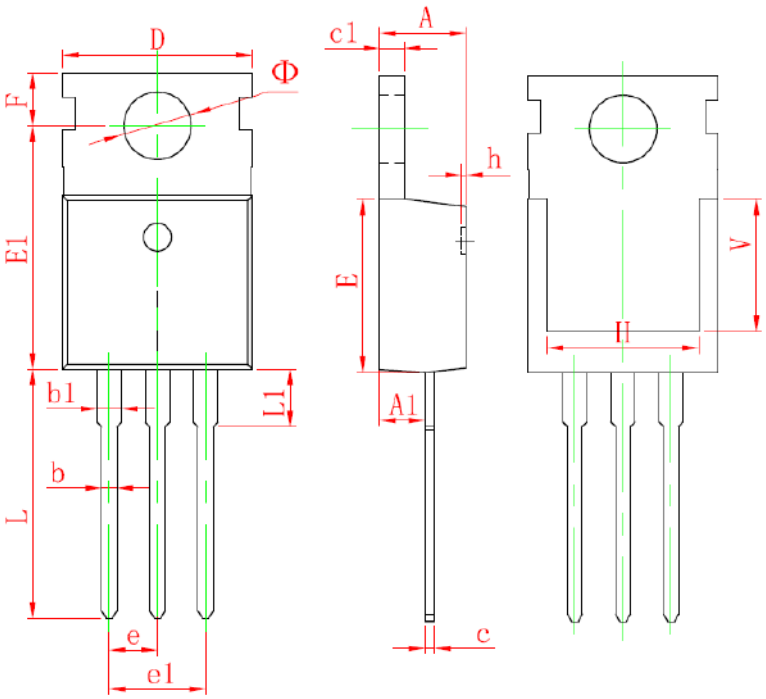
Forward Transfer Admittance vs Drain Current



Transient Thermal Response Curves

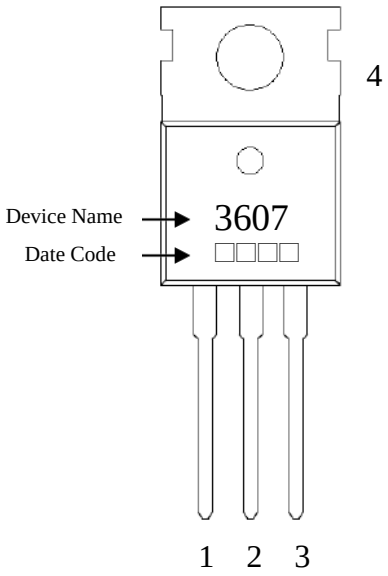


TO-220 Dimension



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