

Product Summary

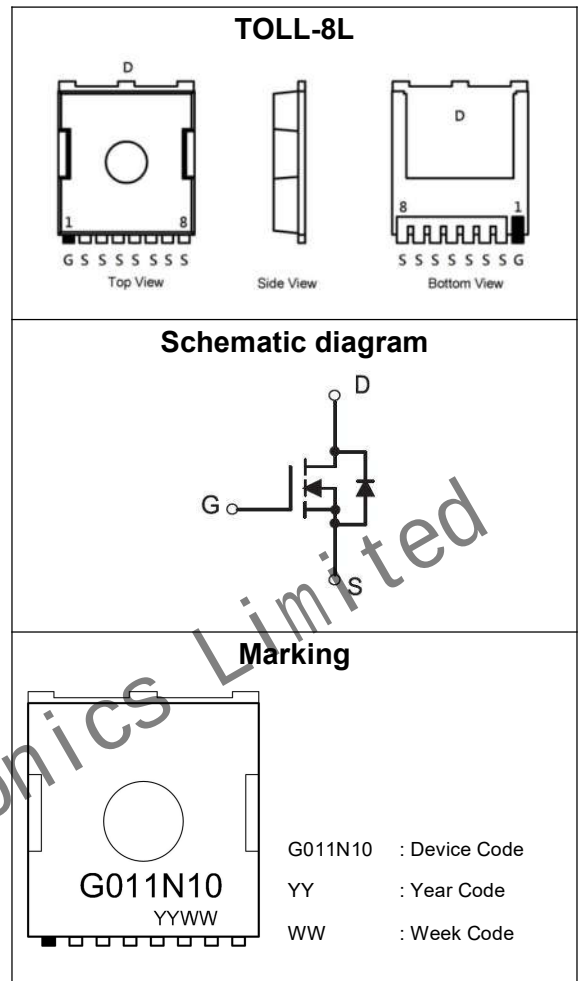
$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
100V	1.06mΩ@10V	420A

Features

- High speed power switching
- Low drain-source on-resistance
- Enhanced body diode dv/dt capability
- Enhanced avalanche ruggedness
- Shielded Gate Trench DMOS technology

Applications

- Motor drivers
- DC-DC Converter
- SR
- UPS
- BMS



Absolute Maximum rating ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain - Source Voltage		V_{DS}	100	V
Gate - Source Voltage		V_{GS}	±20	V
Continuous Drain Current	$T_C = 25^\circ\text{C}$, Silicon limit	I_D	420	A
	$T_C = 25^\circ\text{C}$, Package limi		420	
	$T_C = 100^\circ\text{C}$, Silicon limit		265	
Power Dissipation		P_D	485	W
Avalanche energy ¹		E_{AS}	1760	mJ
Thermal Resistance from Junction to Case		$R_{\theta JC}$	0.26	°C/W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~ +150	°C
Soldering temperature, wave soldering only allowed		T_{sold}	280	°C

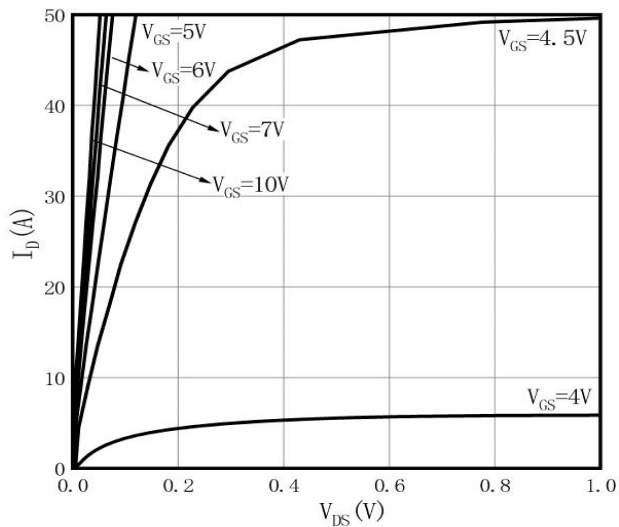
Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain - Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	100			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 100V, V _{GS} = 0V, T _J = 25°C			1	μA
		V _{DS} = 100V, V _{GS} = 0V, T _J = 125°C			100	
Gate - Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	2	3	4	V
Drain-source On-resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 50A, T _J = 25°C		1.06	1.35	mΩ
		V _{GS} = 10V, I _D = 50A, T _J = 150°C		2.15		
Forward transconductance	g _{FS}	V _{DS} = 20V, I _D = 50A		162		S
Dynamic Characteristics						
Input Capacitance	C _{iSS}	V _{DS} = 50V,V _{GS} = 0V,f= 100KHz		16000		pF
Output Capacitance	C _{oSS}			2000		
Reverse Transfer Capacitance	C _{rSS}			72		
Gate resistance	R _g	V _{DS} = 0V,V _{GS} = 0V, f= 1MHz		1.35		Ω
Switching Characteristics						
Total Gate Charge	Q _g	V _{DS} = 50V, I _D = 50A, V _{GS} = 10V		252		nC
Gate-source Charge	Q _{gs}			67		
Gate-drain Charge	Q _{gd}			65		
Gate plateau voltage	V _{plateau}			4.6		V
Output Charge	Q _{oss}	V _{DS} = 50V,V _{GS} = 0V		260		nC
Turn-on Delay Time	t _{d(on)}	V _{DD} = 50V, V _{GS} = 10V, I _D = 50A, R _g = 10Ω		133		ns
Turn-on Rise Time	t _r			161		
Turn-off Delay Time	t _{d(off)}			239		
Turn-off Fall Time	t _f			102		
Source - Drain Diode Characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} = 0V, I _S = 50A			1.1	V
Peak reverse recovery current	I _{rrm}	I _F = 50A, dI/dt= 100A/μs		4.3		A
Reverse Recovery Time	t _{rr}			85		ns
Reverse Recovery Charge	Q _{rr}			214		nC

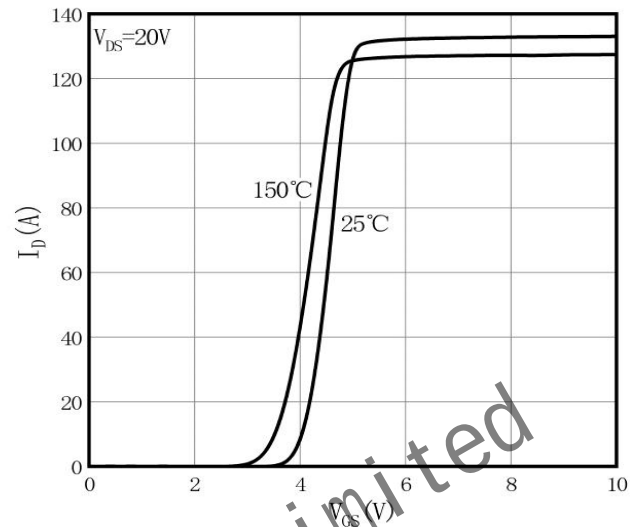
Notes :

1. E_{AS} condition: $T_J = 25^\circ\text{C}, V_{DD} = 50V, V_G = 10V, R_g = 25\Omega, L = 0.5\text{mH}$

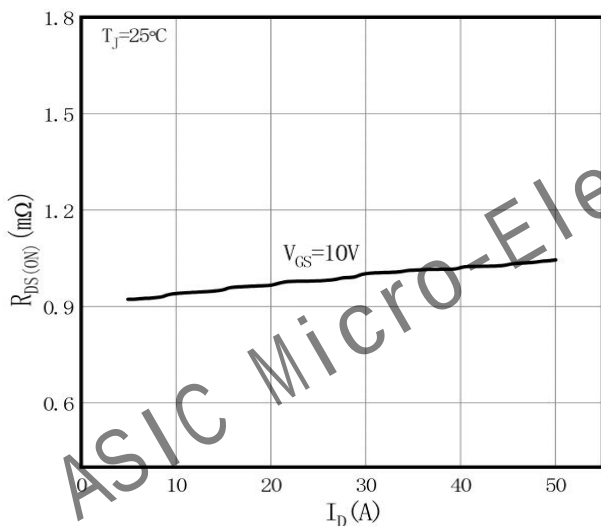
Typical Characteristic



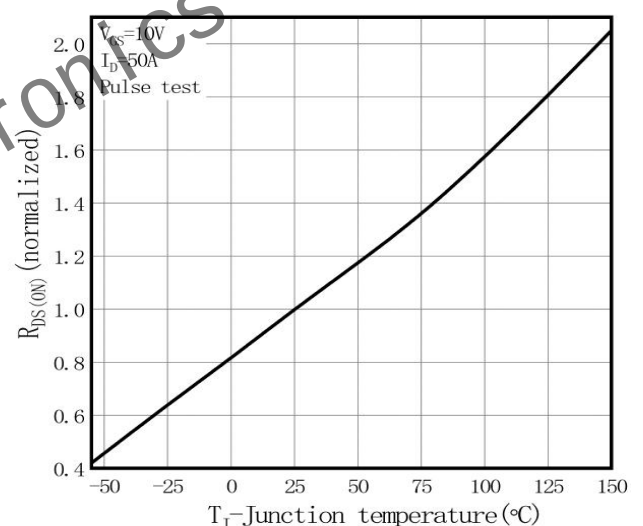
Output Characteristics



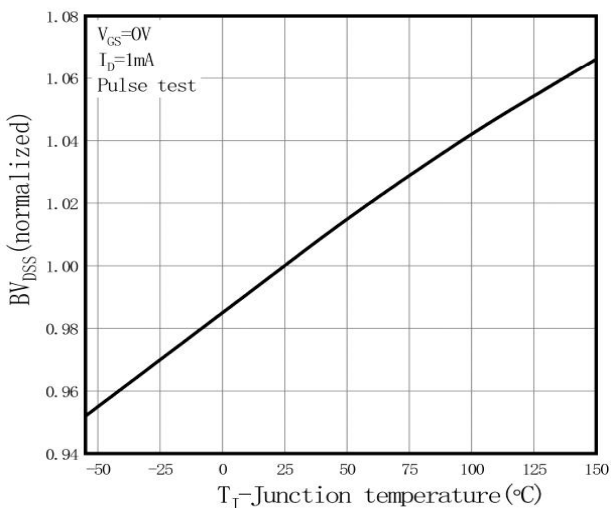
Transfer Characteristic



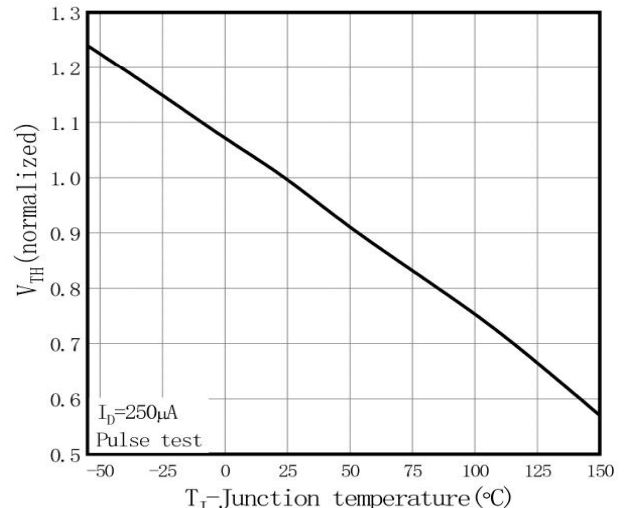
On-Resistance vs. Drain Current



On-Resistance vs. Temperature

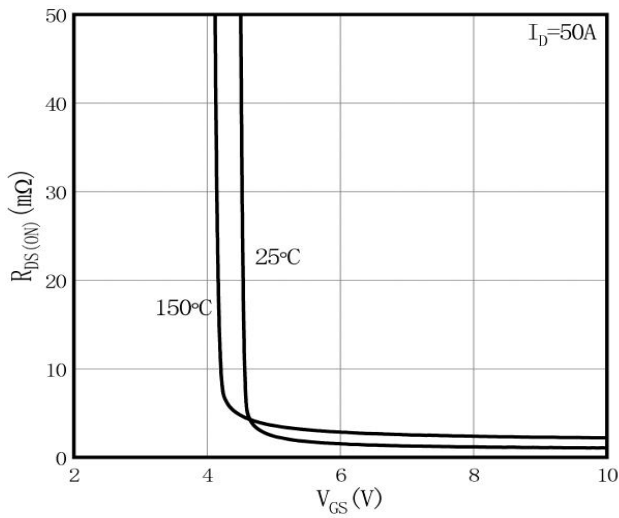


Breakdown Voltage vs. Temperature

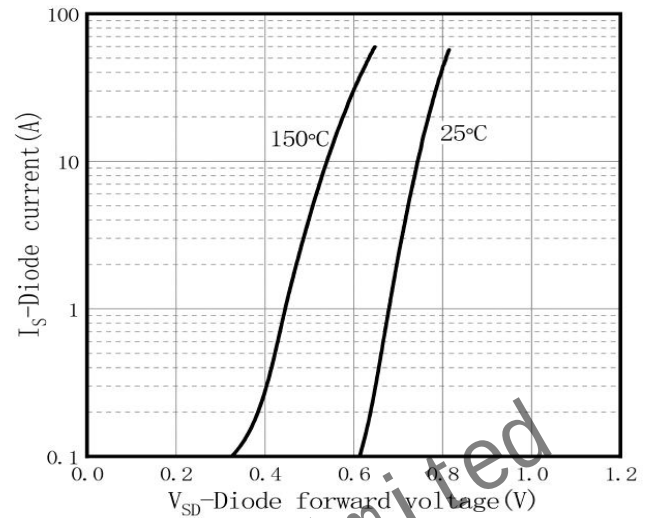


Threshold Voltage vs. Temperature

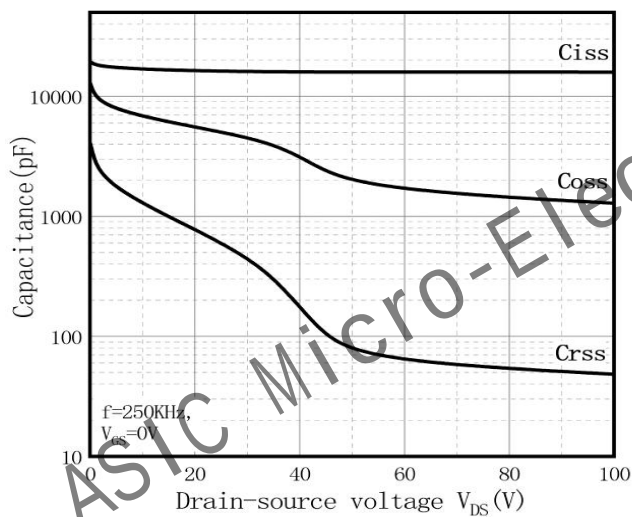
C i h © A d i l d



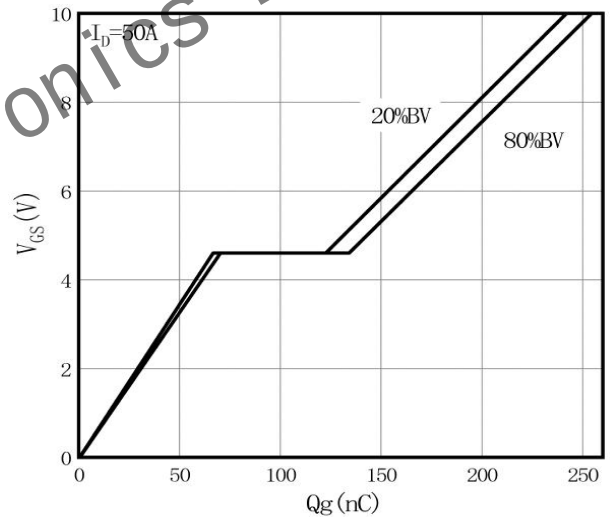
On-Resistance vs. Gate Voltage



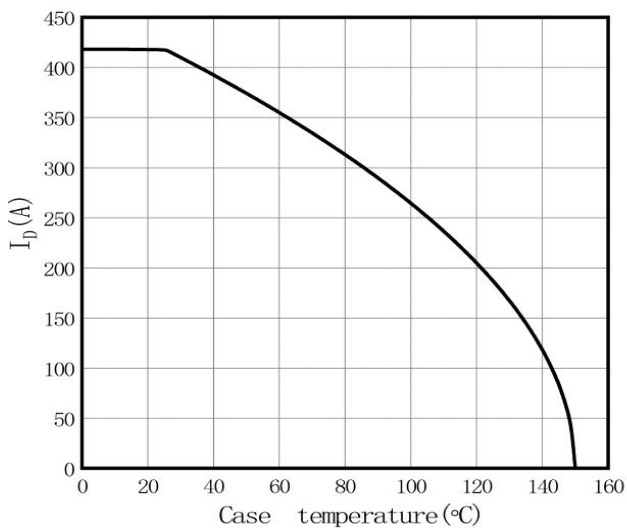
Body-Diode Characteristics



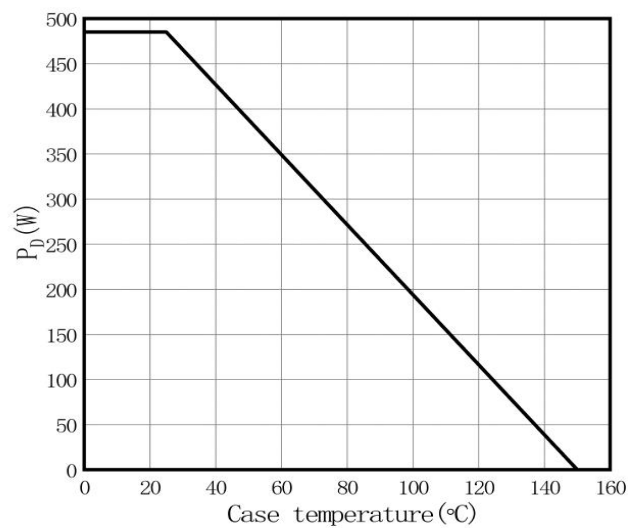
Capacitance Characteristics



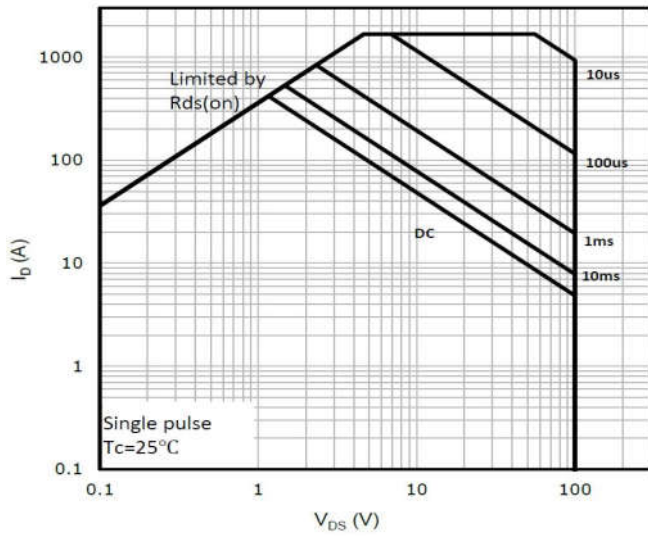
Gate Charge Characteristics



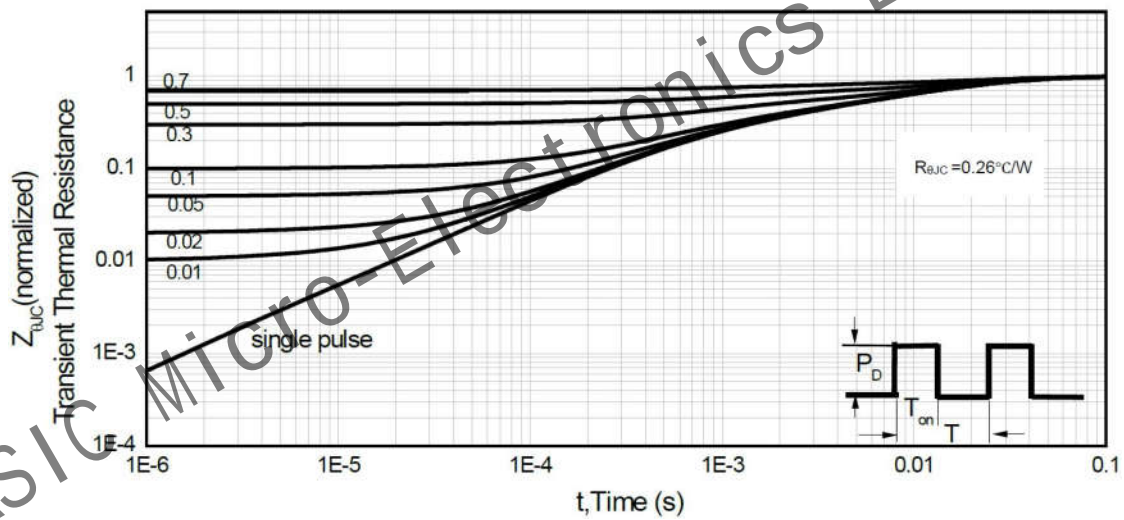
Drain Current



Power Dissipation

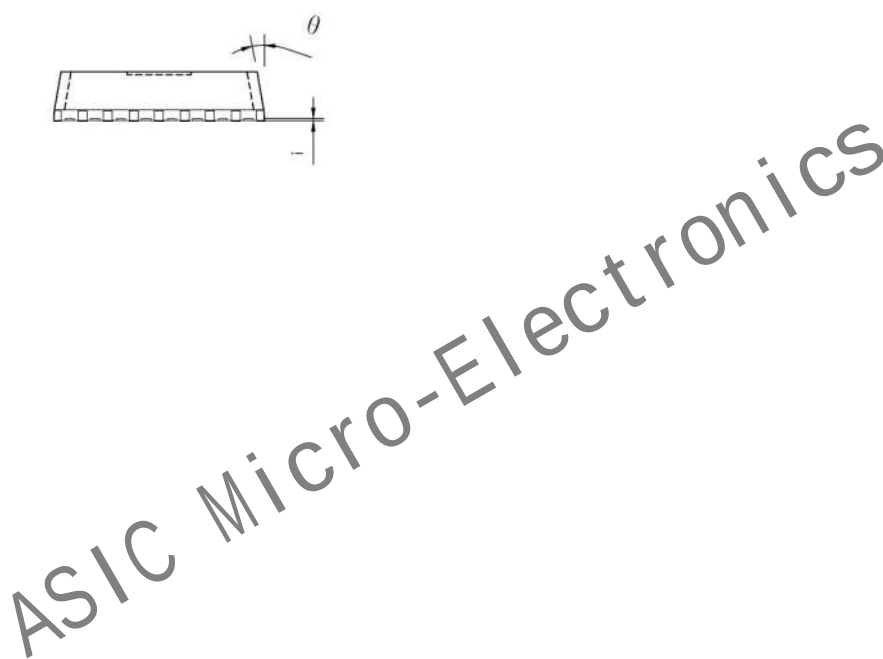


Maximum Safe Operating Area



Normalized Maximum Transient Thermal Impedance (R_{thJC})

TOLL-8L



Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	2.20	2.40	0.087	0.094
b	0.70	0.90	0.028	0.035
b1	9.70	9.90	0.382	0.39
b2	1.20 REF.		0.047 REF.	
c	0.40	0.60	0.016	0.024
D	10.28	10.48	0.405	0.413
D1	4.08	4.28	0.161	0.169
D2	3.20	3.40	0.126	0.134
D3	3.16	3.36	0.124	0.132
E	9.80	10.00	0.386	0.394
E1	8.40	8.60	0.330	0.338
E2	9.30	9.50	0.366	0.374
E3	8.8 REF.		0.346 REF.	
E4	0.25	0.45	0.01	0.018
e	1.20 BASIC		0.047 BASIC	
H	11.58	11.78	0.456	0.464
H1	7.23	7.43	0.285	0.293
H2	2.45 REF.		0.096 REF.	
i	0.10	-	0.004	
j	0.45 REF.		0.018 REF.	
L	1.60	2.10	0.063	0.083
L1	0.60	0.80	0.024	0.031
L2	0.50	0.70	0.020	0.028
L3	1.05	1.30	0.041	0.051
ø	10° REF.		10° REF.	