

EKOWEISS Semi conductor

FDH210N08AM
80V 210A N-Channel Mosfet

General Description

The FDH210N08AM uses advanced Trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge.

This device is suitable for use in PWM, load switching and general purpose applications.

Features

Enhancement Mode

Very low on-resistance $R_{DS(on)}$ @ $V_{GS}=10V$

100% Avalanche Tested

Pb-free lead plating; ROHS compliant



TO-247-3L Top view

VDS	80	V
$R_{DS(on) TYP @ V_{GS}=10V}$	2.8	m Ω
I_D	210	A

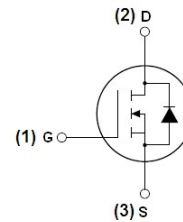
Applications

Power switching application

Hard Switched and High Frequency Circuits

Uninterruptible Power Supply

Isolated DC/DC Converters in Telecom and Industrial



Schematic diagram

Package Marking And Ordering Information

Part ID	Package Type	Marking	Tape and Reel information
FDH210N08AM	TO-247-3L	FDH210N08	30pcs/Tube

Maximum ratings, at $T_j=25^\circ\text{C}$, unless otherwise specified

Symbol	Parameter	Rating	Unit	
$V_{(BR)DSS}$	Drain –Source breakdown voltage	80	V	
I_S	Diode continuous forward current	$T_c=25^\circ\text{C}$ 210	A	
I_D	Continuous drain current @ $V_{GS}=10V$	$T_c=25^\circ\text{C}$	210	A
		$T_c=100^\circ\text{C}$	160	A
I_{DM}	Pulse drain current tested①	$T_c=25^\circ\text{C}$ 400	A	
E_{AS}	Avalanche energy, single pulsed②	1750	mJ	
P_D	Maximum power dissipation	$T_c=25^\circ\text{C}$ 320	W	
V_{GS}	Gate-Source voltage	± 30	V	
$T_{STG} T_J$	Storage and operating temperature range	-55 to 175	$^\circ\text{C}$	

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Thermal Characteristic

Symbol	Parameter	Typical	Unit
R_{QJC}	Thermal Resistance-Junction to Case	0.43	$^{\circ}\text{C}/\text{W}$
R_{QJA}	Thermal Resistance-Junction to Ambient	62.5	$^{\circ}\text{C}/\text{W}$

Typical Characteristics

Symbol	Parameter	Condition	Min	Type	Max	Unit
Static Electrical Characteristics @T_j=25$^{\circ}$C (unless otherwise stated)						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=210\mu A$	80			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=60V, V_{GS}=0V$			1	μA
	Zero Gate Voltage Drain Current(T _j =125 $^{\circ}$ C)	$V_{DS}=60V, V_{GS}=0V$			100	μA
I_{GSS}	Gate-Body Leakage Current	$V_{GS}=\pm 25V, V_{DS}=0V$			± 100	nA
$V_{GS(TH)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=210\mu A$	2		4	V
$R_{DS(ON)}$	Drain-Source On-State Resistance ^③	$V_{GS}=10V, I_D=20A$		2.8	3.6	m Ω
Dynamic Electrical Characteristics @T_j=25$^{\circ}$C (unless otherwise stated)						
C_{iss}	Input Capacitance	$V_{DS}=30V,$		15365		PF
C_{oss}	Output Capacitance	$V_{GS}=0V,$		800		PF
C_{rss}	Reverse Transfer Capacitance	$F=1\text{MHz}$		635		PF
R_g	Gate Resistance	$F=1\text{MHz}$		2		Ω
Q_g	Total Gate Charge	$V_{DS}=64V,$		155		nC
Q_{gs}	Gate-Source Charge	$I_D=80A,$		45		nC
Q_{gd}	Gate-Drain Charge	$V_{GS}=10V$		48		nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay time	$V_{DD}=30V$		38		nS
t_r	Turn-on Rise time	$I_D=1A$		22		nS
$t_{d(off)}$	Turn-off Delay time	$R_G=2.3\ \Omega$		124		nS
t_f	Turn-off Fall time	$V_{GS}=10V$		75		nS
Source-Drain Diode Characteristics						
V_{SD}	Forward on voltage	$I_{SD}=20A, V_{GS}=0V$		0.8	1.3	V
t_{rr}	Reverse Recovery Time	$T_j=25^{\circ}\text{C}, I_{SD}=40A$		68		nS
Q_{rr}	Reverse Recovery Charge	$V_{GS}=0V, di/dt=500A/\mu s$		130		nC

Note:

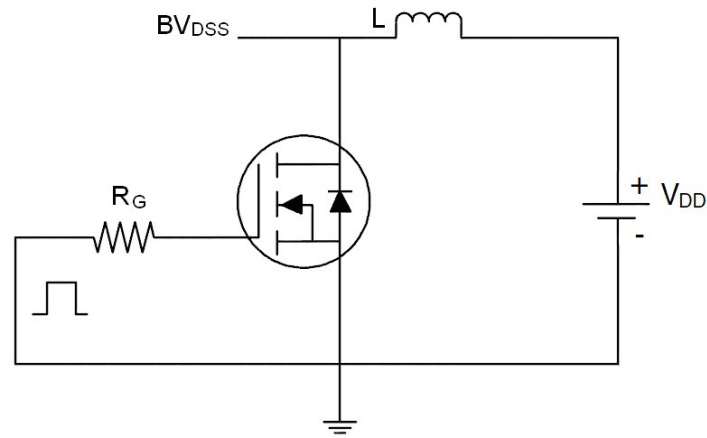
- ① Repetitive rating; pulse width limited by max, junction temperature.
- ② Limited by T_jmax, starting T_j=25 $^{\circ}$ C, L=0.5mH, R_G=25 Ω , I_{AS}=20A, V_{GS}=10V, Part not recommended for use above this value
- ③ Pulse width $\leq 300\mu s$; duty cycle $\leq 2\%$

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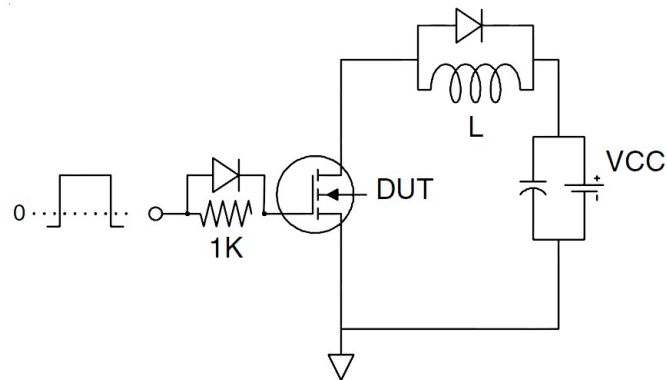
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Test circuit

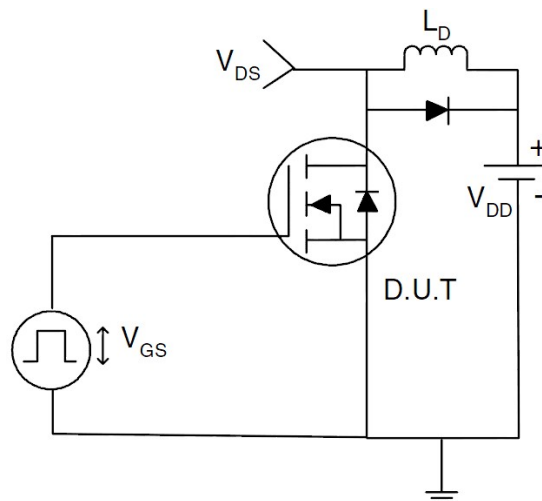
(1) E_{AS} test circuits



(2) Gate charge test circuit



(3) Switch time test circuit

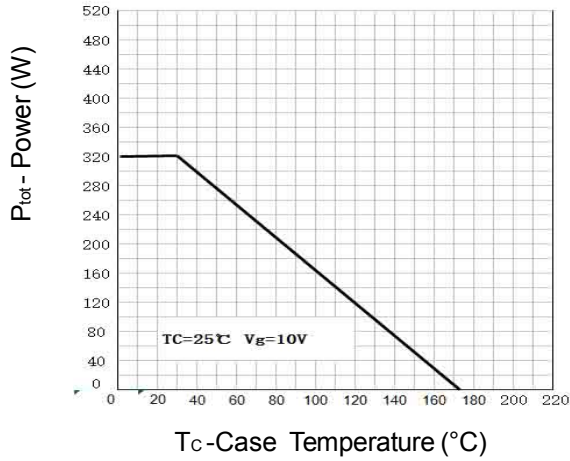


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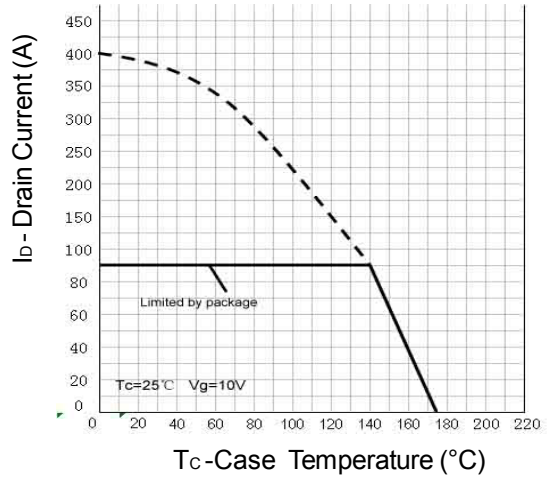
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Typical Operating Characteristics

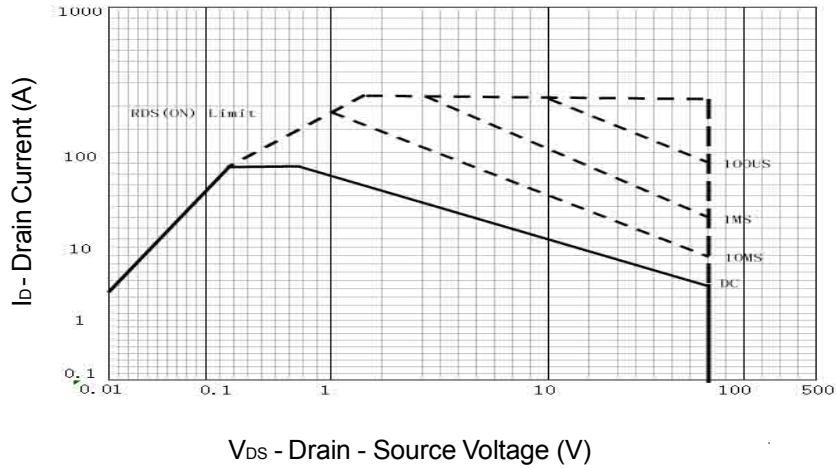
Power Dissipation



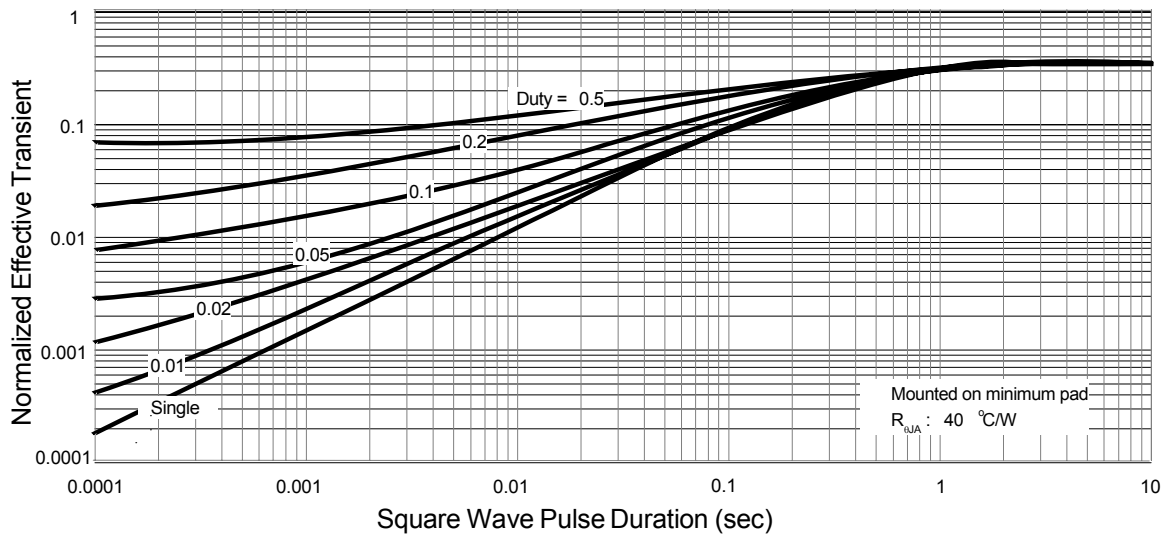
Drain Current



Safe Operation Area



Thermal Transient Impedance

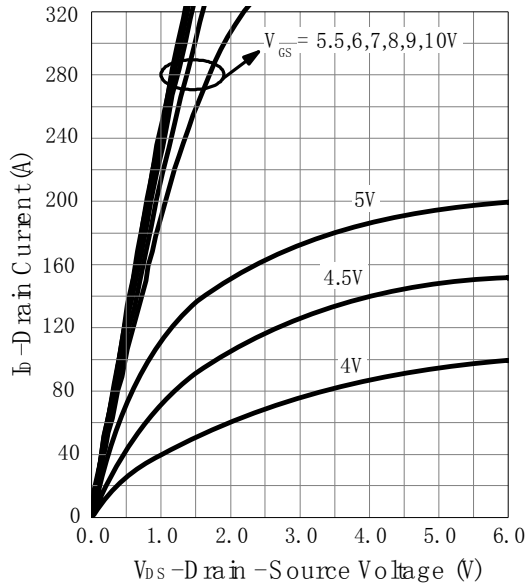


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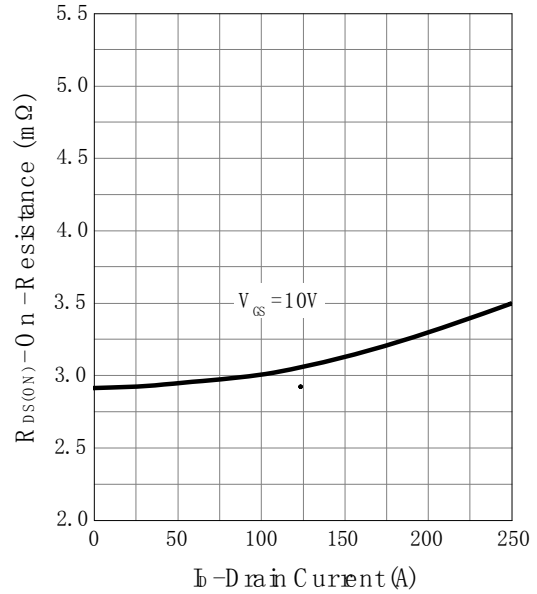
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Typical Operating Characteristics (Cont.)

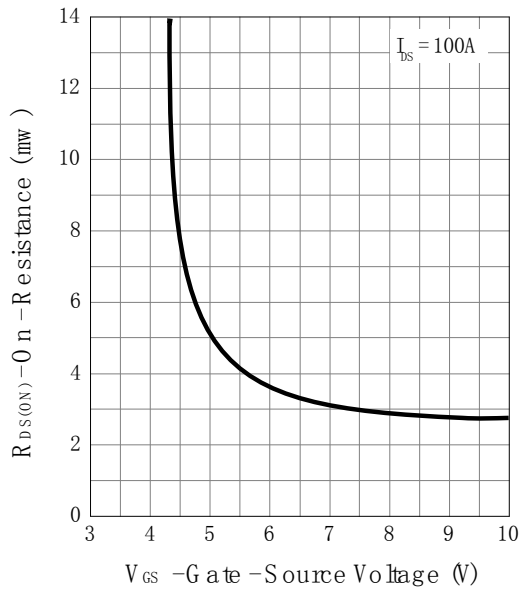
Output Characteristics



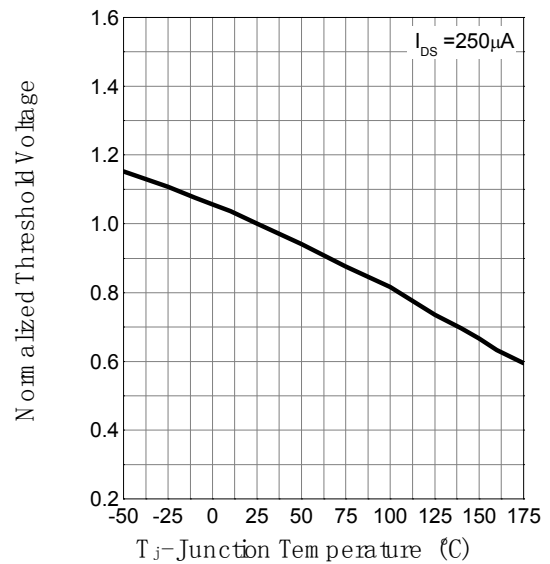
Drain-Source On Resistance



Gate-Source On Resistance



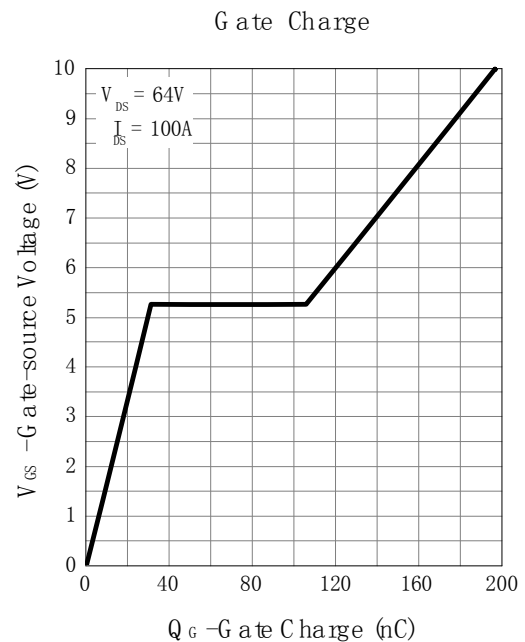
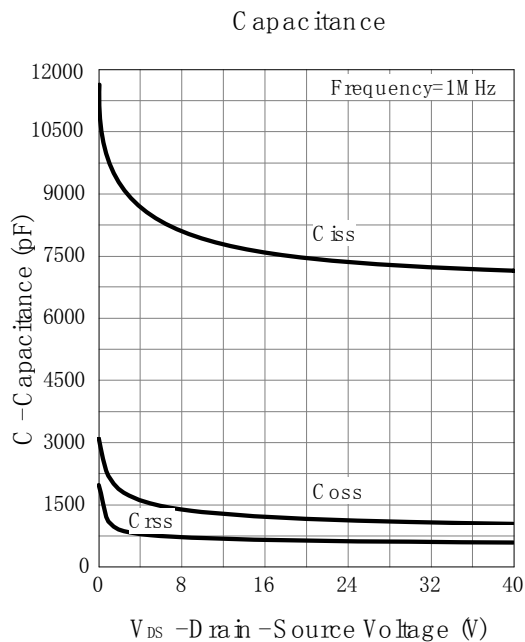
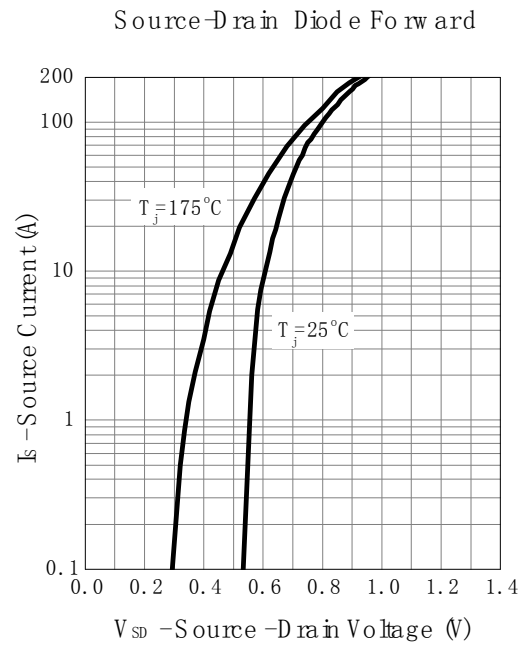
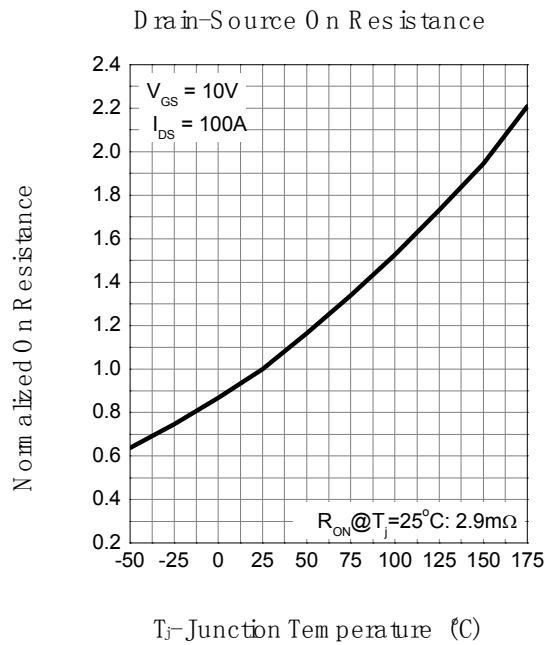
Gate Threshold Voltage



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Typical Operating Characteristics (Cont.)

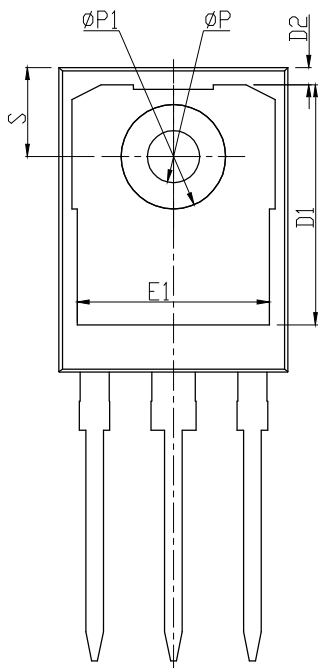
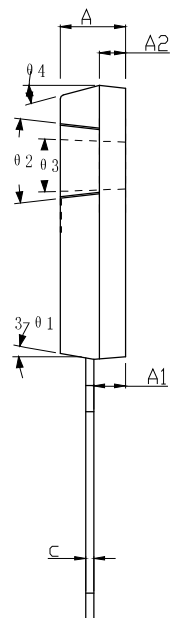
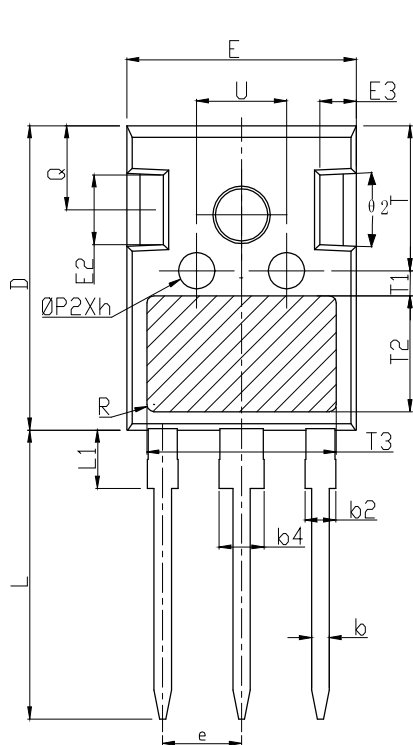


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Package Information

TO-247-3L



COMMON DIMENSIONS

SYMBOL	mm		
	MIN	NOM	MAX
A	4.90	5.00	5.10
A1	2.31	2.41	2.51
A2	1.90	2.00	2.10
b	1.16	1.21	1.26
b2	1.96	2.01	2.06
b4	2.96	3.01	3.06
c	0.59	0.61	0.66
D	20.90	21.00	21.10
D1	16.25	16.55	16.85
D2	1.05	1.20	1.35
E	15.70	15.80	15.90
E1	13.10	13.30	13.50
E2	4.90	5.00	5.10
E3	2.40	2.50	2.60
e	5.44BSC		
h	0.05	0.10	0.15
L	19.80	19.92	20.10
L1	-	-	4.30
ΦP	3.50	3.60	3.70
ΦP1	-	-	7.30
ΦP2	2.40	2.50	2.60
Q	5.60	5.80	6.00
S	6.15BSC		
R	0.50REF		
T	9.80	-	10.20
T1	1.65REF		
T2	8.00REF		
T3	12.80REF		
U	6.00	-	6.40
θ 1	6°	7°	8°
θ 2	4°	5°	6°
θ 3	1°	-	1.5°
θ 4	14°	15°	16°