

Features

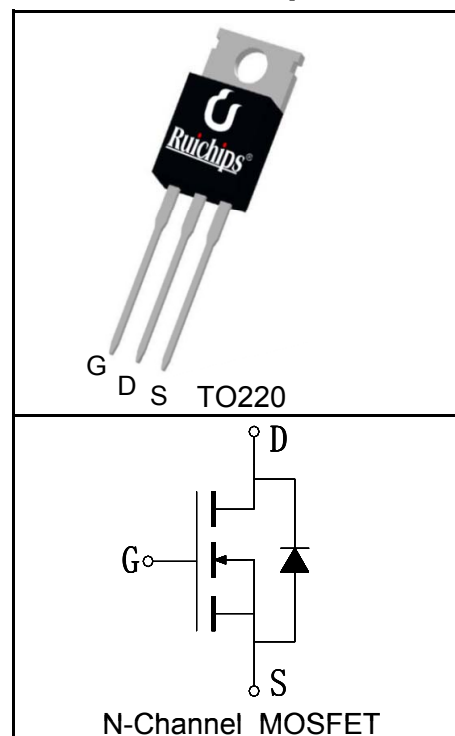
- 85V/150A,
 $R_{DS(on)} = 3.4m\Omega(Typ.)@V_{GS}=10V$
- Uses Ruichips advanced RUISGT™ Technology
- Ultra Low On-Resistance
- Excellent $Q_g \times R_{DS(on)}$ Product
- 100% Avalanche Tested
- 175°C Operating Temperature
- Lead Free and Green Devices (RoHS Compliant)



Applications

- Motor Drives
- Uninterruptible Power Supplies
- DC/DC Converter
- General Purpose Applications

Pin Description



Absolute Maximum Ratings

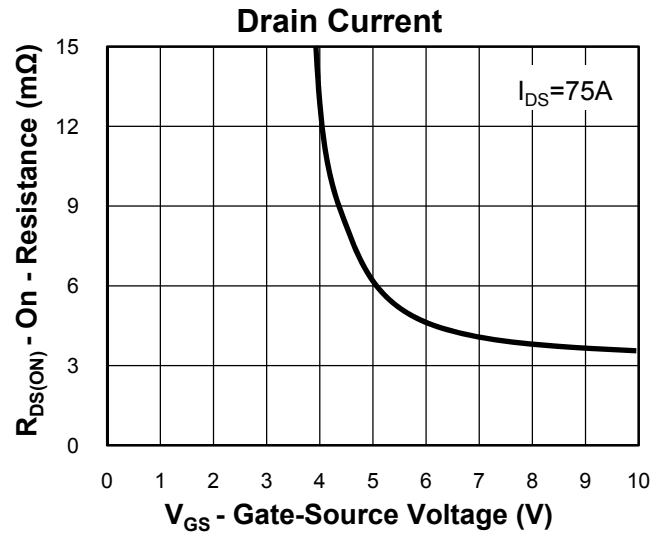
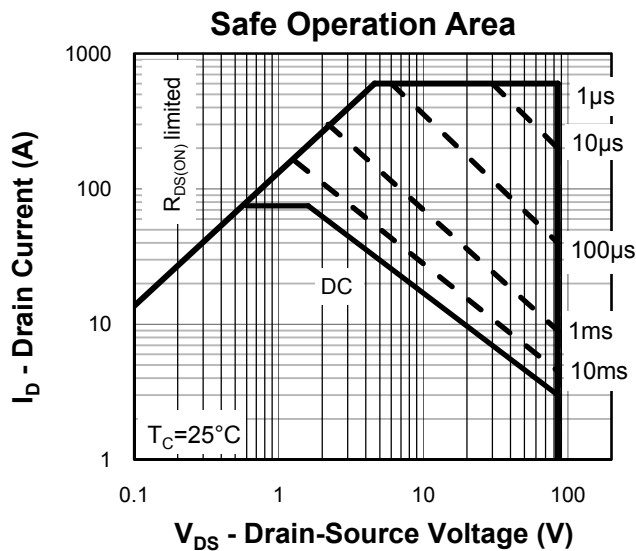
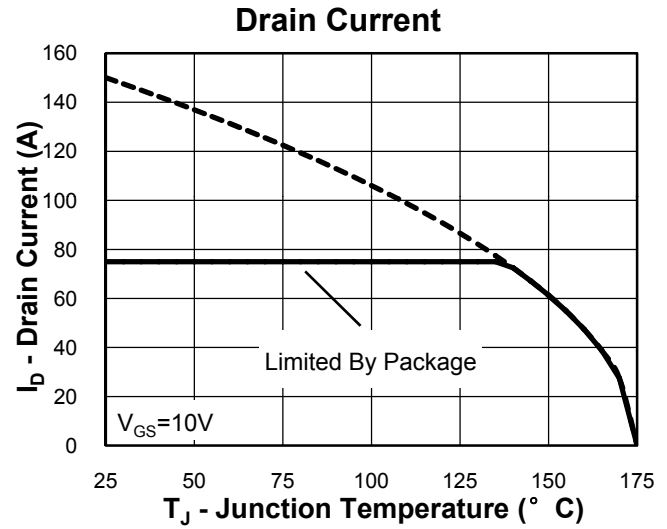
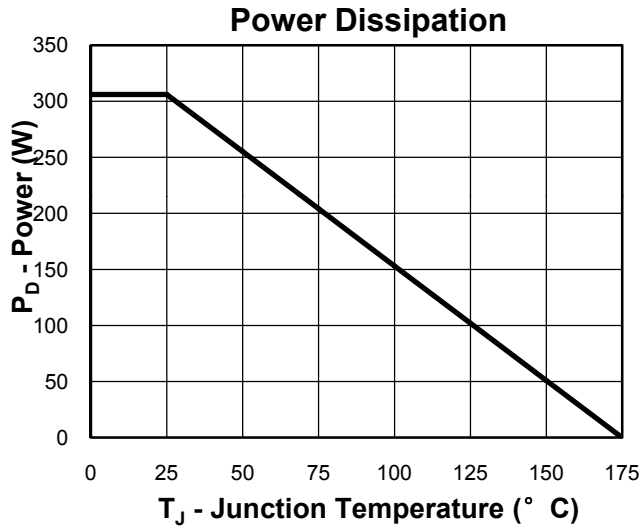
Symbol	Parameter		Rating	Unit
Common Ratings (T _C =25°C Unless Otherwise Noted)				
V _{DSS}	Drain-Source Voltage		85	V
V _{GSS}	Gate-Source Voltage		±25	
T _J	Maximum Junction Temperature		175	°C
T _{STG}	Storage Temperature Range		-55 to 175	°C
I _S	Diode Continuous Forward Current	T _C =25°C	150	A
Mounted on Large Heat Sink				
I _{DP} ^①	300μs Pulse Drain Current Tested	T _C =25°C	600	A
I _D ^②	Continuous Drain Current(V _{GS} =10V)	T _C =25°C	150	A
		T _C =100°C	106	
P _D	Maximum Power Dissipation	T _C =25°C	306	W
		T _C =100°C	153	
R _{θJC}	Thermal Resistance-Junction to Case		0.49	°C/W
R _{θJA}	Thermal Resistance-Junction to Ambient		49	°C/W
Drain-Source Avalanche Ratings				
E _{AS} ^③	Avalanche Energy, Single Pulsed		1122	mJ

Electrical Characteristics ($T_C=25^{\circ}\text{C}$ Unless Otherwise Noted)

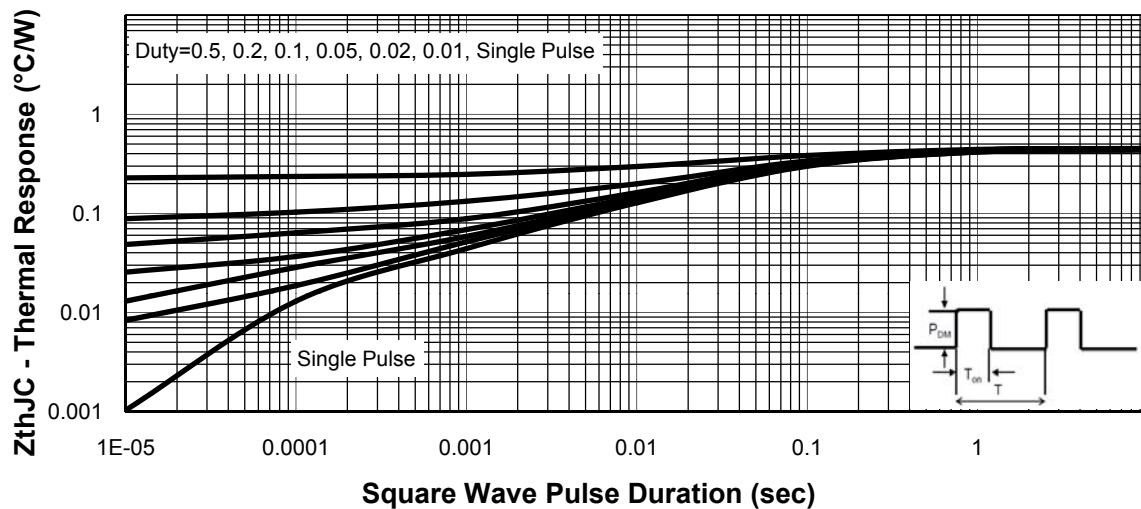
Symbol	Parameter	Test Condition	RUH85150R			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	85			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =85V, V _{GS} =0V			1	μA
		T _J =125°C			30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	2		4	V
I _{GSS}	Gate Leakage Current	V _{GS} =±25V, V _{DS} =0V			±100	nA
R _{DS(ON)} ^④	Drain-Source On-state Resistance	V _{GS} =10V, I _{DS} =75A		3.4	4	mΩ
Diode Characteristics						
V _{SD} ^④	Diode Forward Voltage	I _{SD} =75A, V _{GS} =0V		0.9	1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =40A, dI _{SD} /dt=100A/μs		52	80	ns
Q _{rr}	Reverse Recovery Charge			94	150	nC
Dynamic Characteristics ^⑤						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz		1.1	1.6	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =50V, Frequency=1.0MHz		6150	6500	pF
C _{oss}	Output Capacitance			770	1300	
C _{rss}	Reverse Transfer Capacitance			30	60	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =50V, I _{DS} =75A, V _{GEN} =10V, R _G =2.5Ω		26	50	ns
t _r	Turn-on Rise Time			38	60	
t _{d(OFF)}	Turn-off Delay Time			51	80	
t _f	Turn-off Fall Time			24	40	
Gate Charge Characteristics ^⑤						
Q _g	Total Gate Charge	V _{DS} =50V, V _{GS} =10V, I _{DS} =40A		87	110	nC
Q _{gs}	Gate-Source Charge			25	40	
Q _{gd}	Gate-Drain Charge			23	35	

- Notes:
- ① Pulse width limited by safe operating area.
 - ② Calculated continuous current based on maximum allowable junction temperature. The package limitation current is 75A.
 - ③ Limited by T_{Jmax} , $I_{AS}=67A$, $V_{DD}=48V$, $R_G=50\Omega$, Starting $T_J=25^{\circ}\text{C}$.
 - ④ Pulse test; Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
 - ⑤ Guaranteed by design, not subject to production testing.

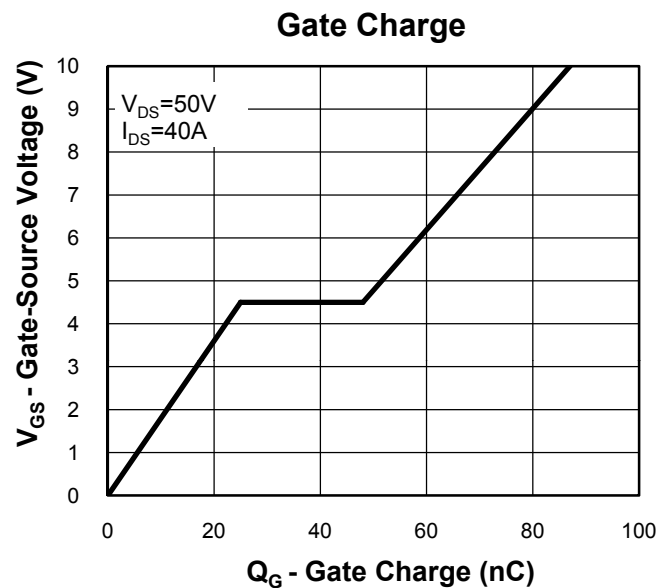
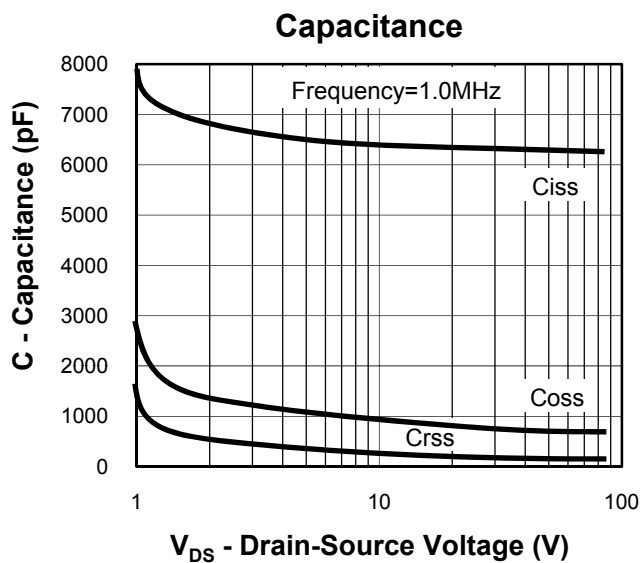
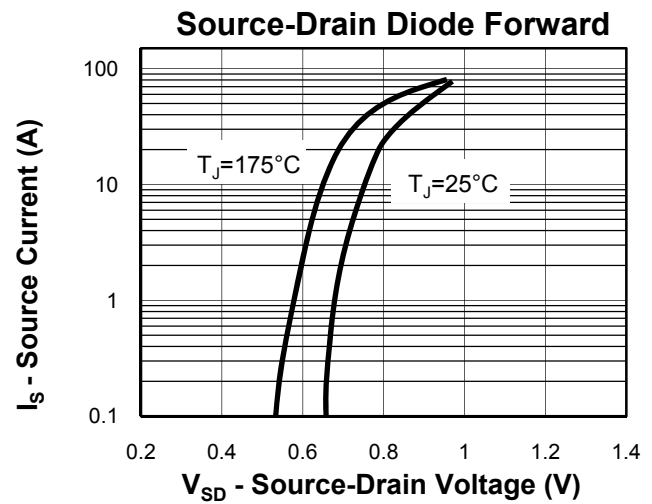
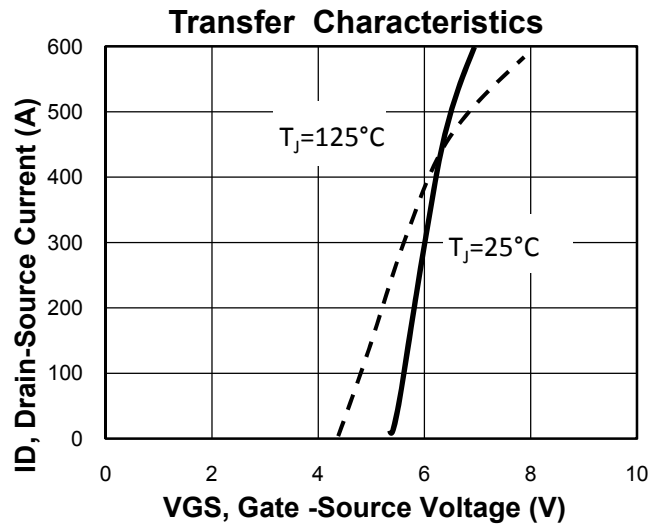
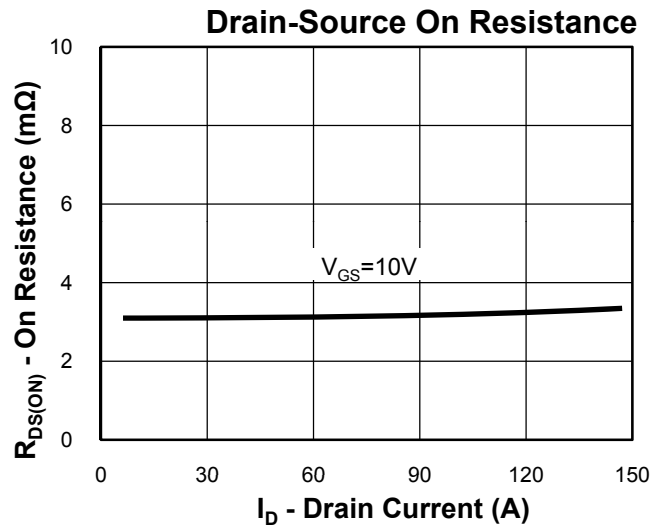
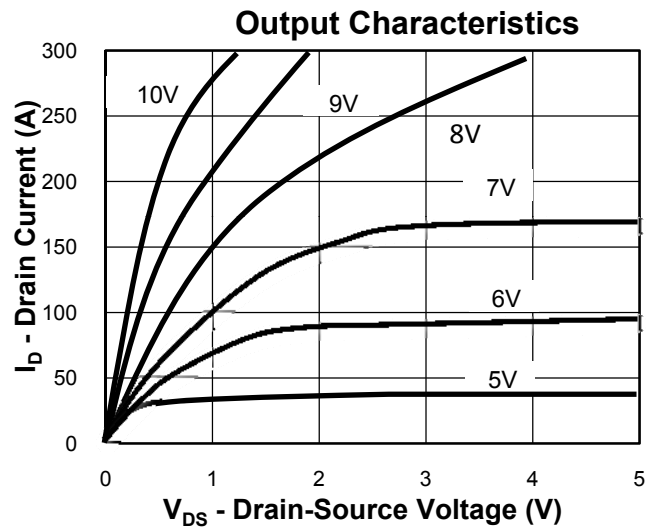
Typical Characteristics



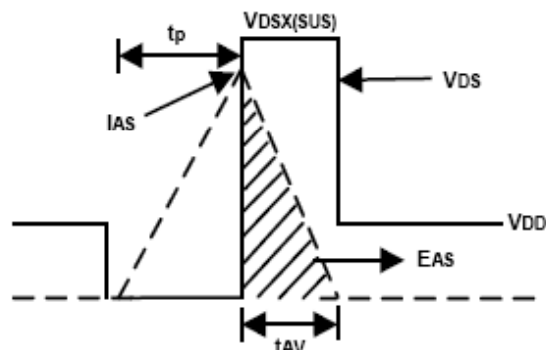
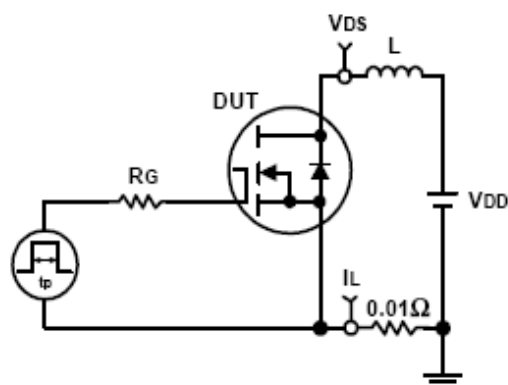
Thermal Transient Impedance



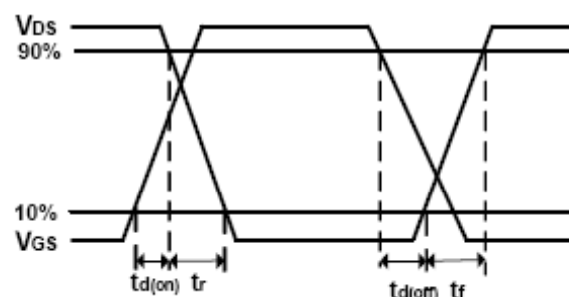
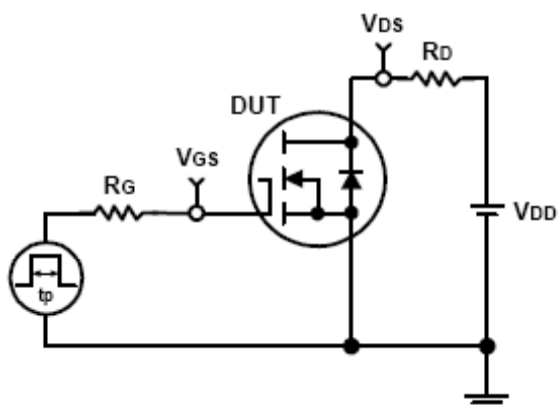
Typical Characteristics



Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms

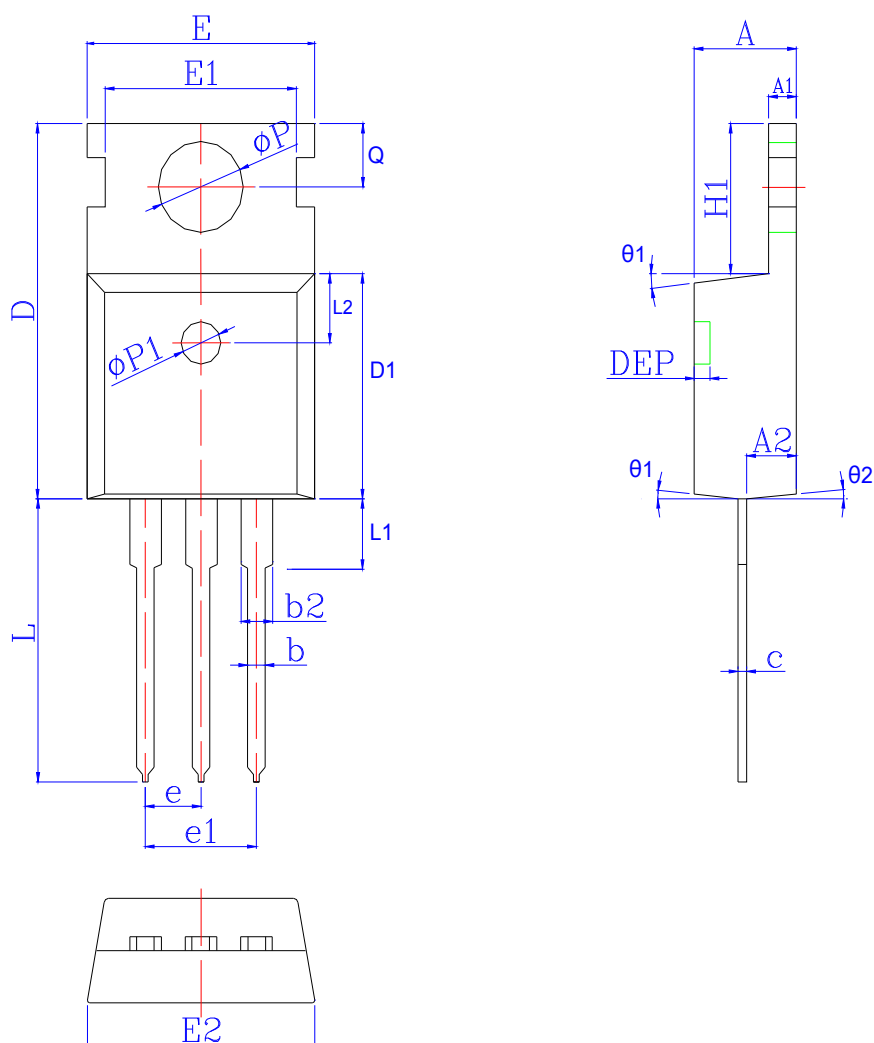


Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape
RUH85150R	RUH85150R	TO220	Tube	50	-	-

Package Information

TO220



SYMBOL	MM			INCH			SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX		MIN	NOM	MAX	MIN	NOM	MAX
A	4.30	4.54	4.77	0.169	0.179	0.188	$\Phi p1$	1.40	1.50	1.60	0.055	0.059	0.063
A1	1.15	1.30	1.40	0.045	0.051	0.055	e	2.54 BSC			0.10 BSC		
A2	1.90	2.25	2.60	0.075	0.089	0.102	e1	5.08 BSC			0.20 BSC		
b	0.60	0.80	1.00	0.024	0.031	0.039	H1	6.30	6.50	6.80	0.248	0.256	0.268
b2	1.17	1.28	1.72	0.046	0.050	0.068	L	12.70	13.18	13.65	0.500	0.519	0.537
c	0.40	0.50	0.60	0.016	0.020	0.024	L1	*	*	3.95	*	*	0.156
D	15.40	15.70	16.00	0.606	0.618	0.630	L2	2.50 REF			0.098 REF		
D1	8.96	9.21	9.46	0.353	0.363	0.372	Φp	3.50	3.60	3.75	0.138	0.142	0.148
DEP	*	*	0.30	*	*	0.012	Q	2.70	2.80	3.20	0.106	0.110	0.126
E	9.66	9.97	10.28	0.380	0.393	0.405	$\theta 1$	5°	7°	9°	5°	7°	9°
E1	*	8.70	*	*	0.343	*	$\theta 2$	1°	3°	5°	1°	3°	5°
E2	9.80	10.00	10.20	0.386	0.394	0.402							