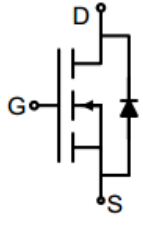
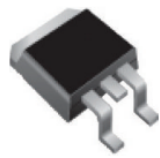



N-Channel Enhancement Mode Power MOSFET

<p>Description</p> <p>The GT045N10 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge. It can be used in a wide variety of applications.</p> <p>General Features</p> <ul style="list-style-type: none"> ● V_{DS} 100V ● I_D (at $V_{GS} = 10V$) 130A ● $R_{DS(ON)}$ (at $V_{GS} = 10V$) < 4.5mΩ ● $R_{DS(ON)}$ (at $V_{GS} = 4.5V$) < 6.3mΩ ● 100% Avalanche Tested ● RoHS Compliant <p>Application</p> <ul style="list-style-type: none"> ● Power switch ● DC/DC converters ● BMS 		 <p>Schematic Diagram</p>  <p>TO-263</p>  <p>TO-220</p>	
Device	Package	Marking	Packaging
GT045N10M	TO-263	GT045N10	800pcs/Reel
GT045N10T	TO-220	GT045N10	50pcs/Tube

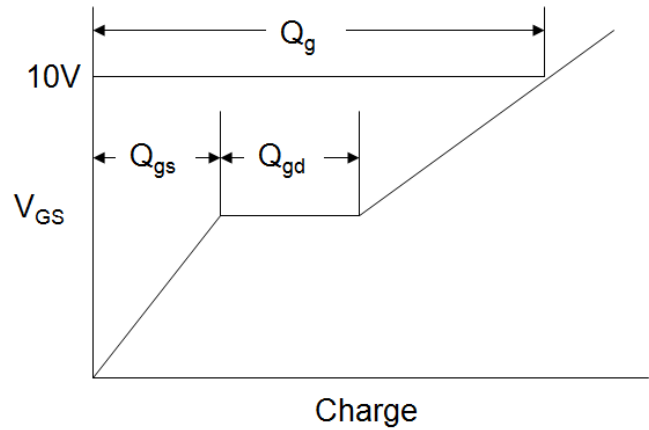
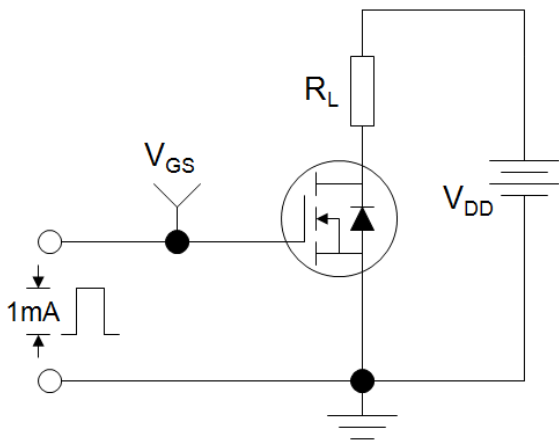
Absolute Maximum Ratings $T_C = 25^\circ C$, unless otherwise noted			
Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Continuous Drain Current	I_D	130	A
Pulsed Drain Current (note1)	I_{DM}	240	A
Gate-Source Voltage	V_{GS}	± 20	V
Single Pulse Avalanche Energy (note2)	EAS	42	mJ
Power Dissipation	P_D	156	W
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 To 150	$^\circ C$
Thermal Resistance			
Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Ambient	R_{thJA}	62.5	$^\circ C/W$
Thermal Resistance, Junction-to-Case	R_{thJC}	0.8	$^\circ C/W$

Specifications $T_J = 25^\circ\text{C}$, unless otherwise noted						
Parameter	Symbol	Test Conditions	Value			Unit
			Min.	Typ.	Max.	
Static Parameters						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	100	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 100V, V_{GS} = 0V$	--	--	1	μA
Gate-Source Leakage	I_{GSS}	$V_{GS} = \pm 20V$	--	--	± 100	nA
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1	2	3	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 20A$	--	4.1	4.5	m Ω
		$V_{GS} = 4.5V, I_D = 20A$	--	6.0	6.3	
Forward Transconductance	g_{FS}	$V_{DS}=10V, I_D=20A$	--	60	--	S
Dynamic Parameters						
Input Capacitance	C_{iss}	$V_{GS} = 0V,$ $V_{DS} = 50V,$ $f = 1.0MHz$	--	6124	--	pF
Output Capacitance	C_{oss}		--	792	--	
Reverse Transfer Capacitance	C_{rss}		--	15	--	
Total Gate Charge	Q_g	$V_{DD} = 50V,$ $I_D = 20A,$ $V_{GS} = 10V$	--	101.6	--	nC
Gate-Source Charge	Q_{gs}		--	20.6	--	
Gate-Drain Charge	Q_{gd}		--	28.7	--	
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = 50V,$ $I_D = 20A,$ $R_G = 4.5\Omega$	--	28.2	--	ns
Turn-on Rise Time	t_r		--	7.5	--	
Turn-off Delay Time	$t_{d(off)}$		--	81.9	--	
Turn-off Fall Time	t_f		--	20.1	--	
Drain-Source Body Diode Characteristics						
Continuous Body Diode Current	I_S	$T_C = 25^\circ\text{C}$	--	--	130	A
Pulsed Diode Forward Current	I_{SM}		--	--	390	
Body Diode Voltage	V_{SD}	$T_J = 25^\circ\text{C}, I_{SD} = 20A, V_{GS} = 0V$	--	--	1.3	V

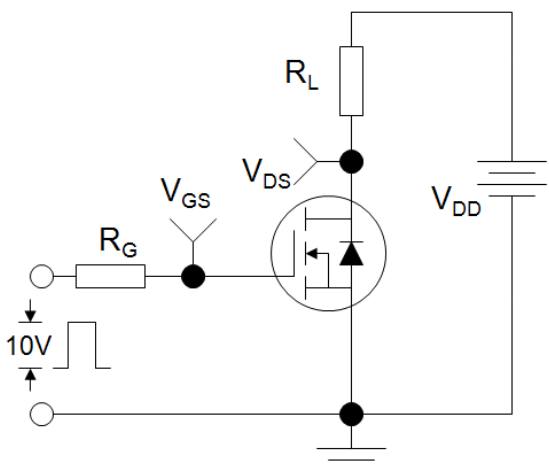
Notes

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. $I_{AS} = 23A, V_{DD} = 50V, R_G = 25\Omega, \text{Starting } T_J = 25^\circ\text{C}$
3. Identical low side and high side switch with identical R_G

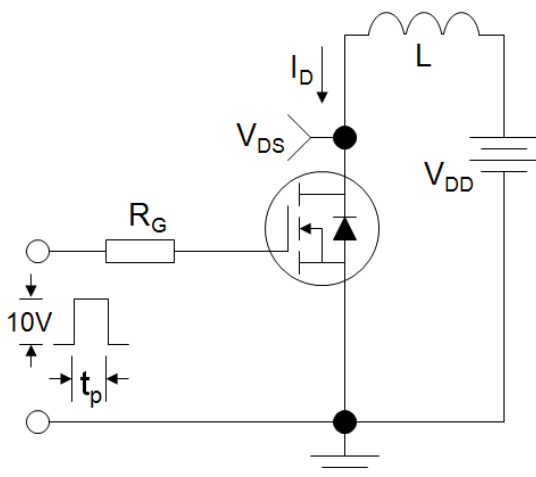
Gate Charge Test Circuit



Switch Time Test Circuit



EAS Test Circuit



Typical Characteristics $T_J = 25^\circ\text{C}$, unless otherwise noted

Figure 1. Output Characteristics

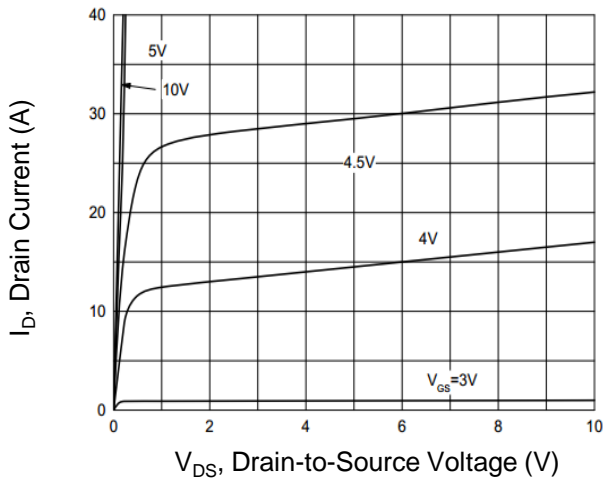


Figure 2. Transfer Characteristics

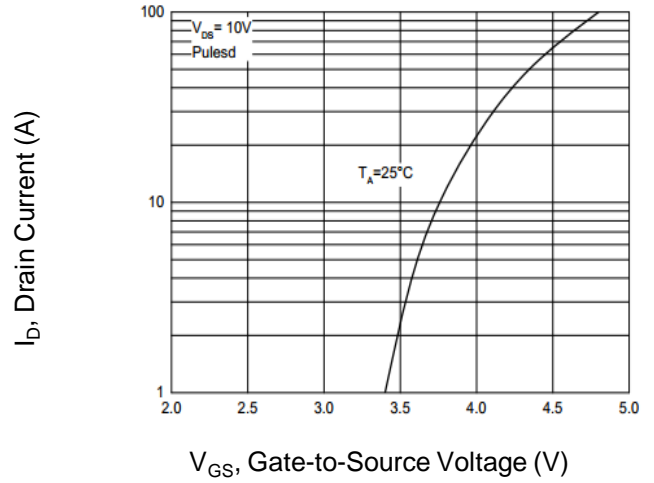


Figure 3. $R_{DS(on)}$ -Drain Current

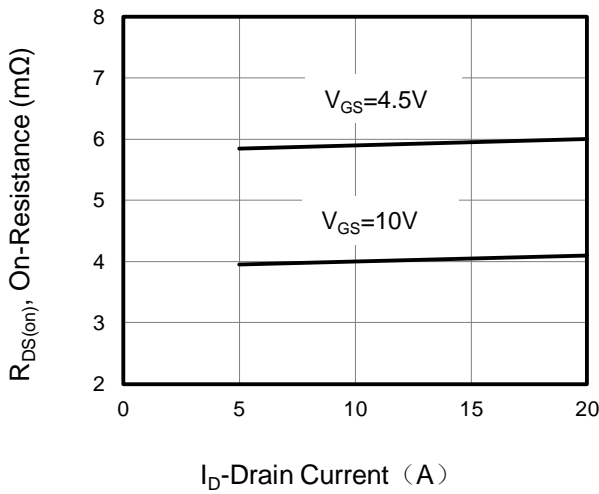


Figure 4. Gate Charge

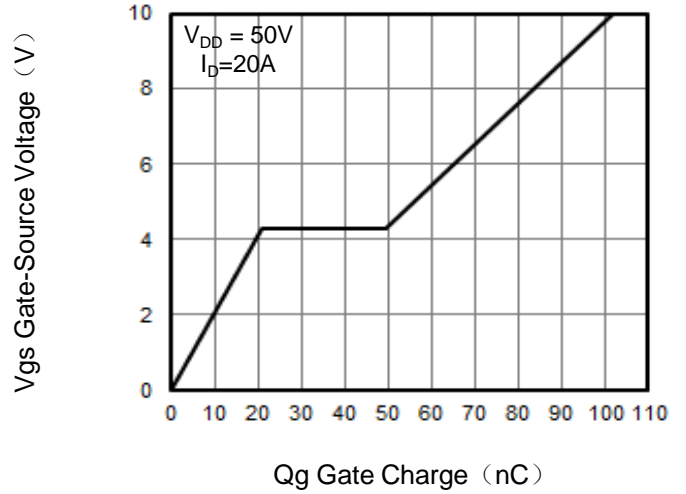


Figure 5. Capacitance vs Vds

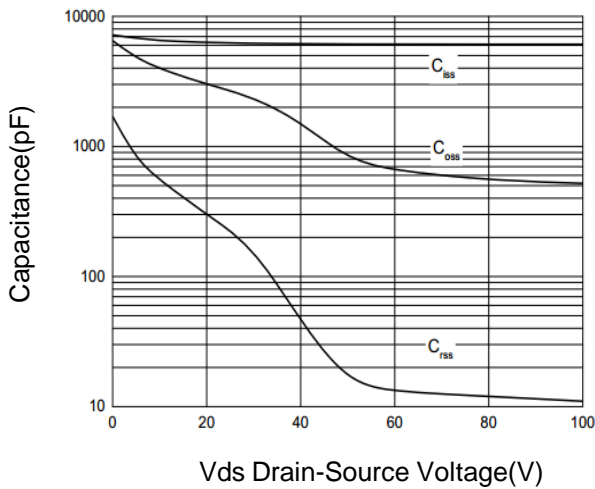
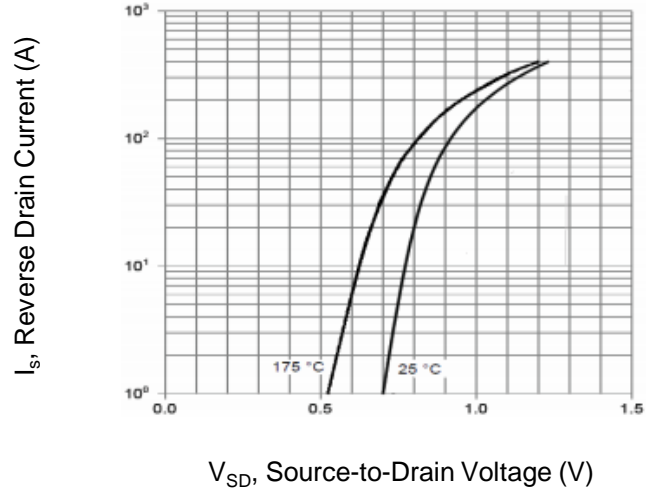


Figure 6. Source-Drain Diode Forward



Typical Characteristics $T_J = 25^\circ\text{C}$, unless otherwise noted

Figure 7. Drain-Source On-Resistance

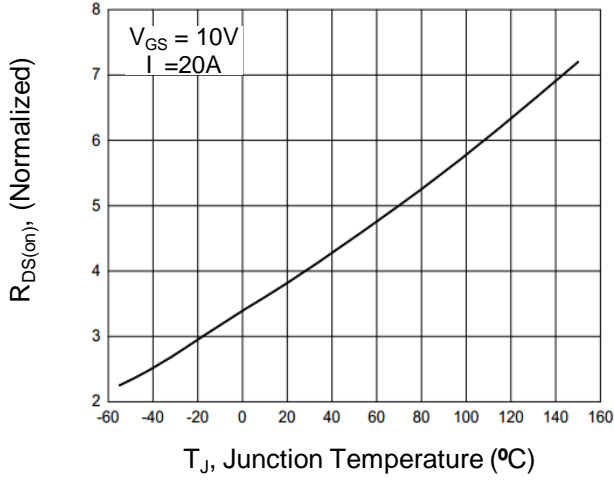


Figure 8. Safe Operation Area

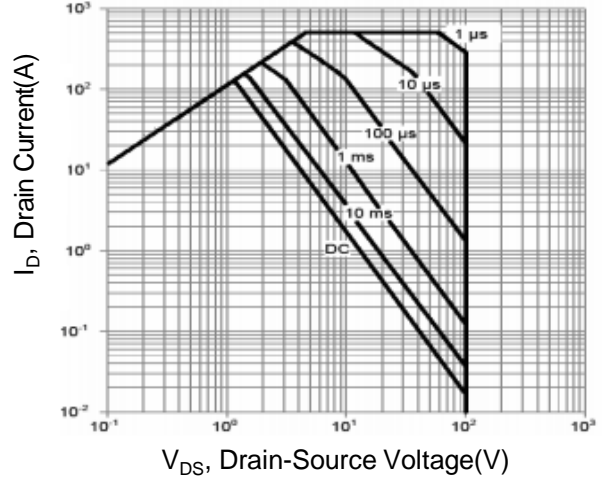
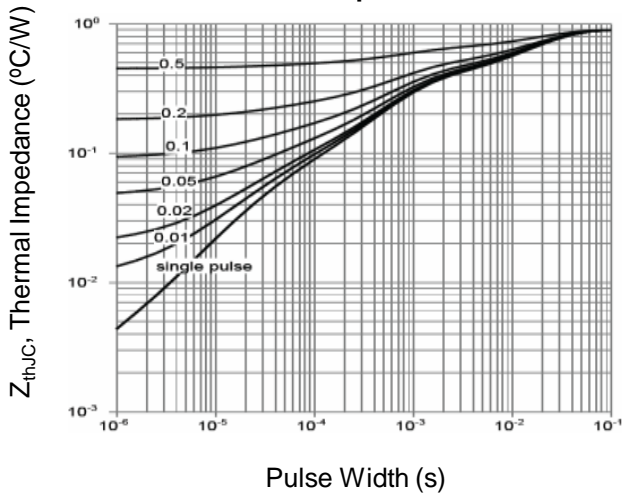
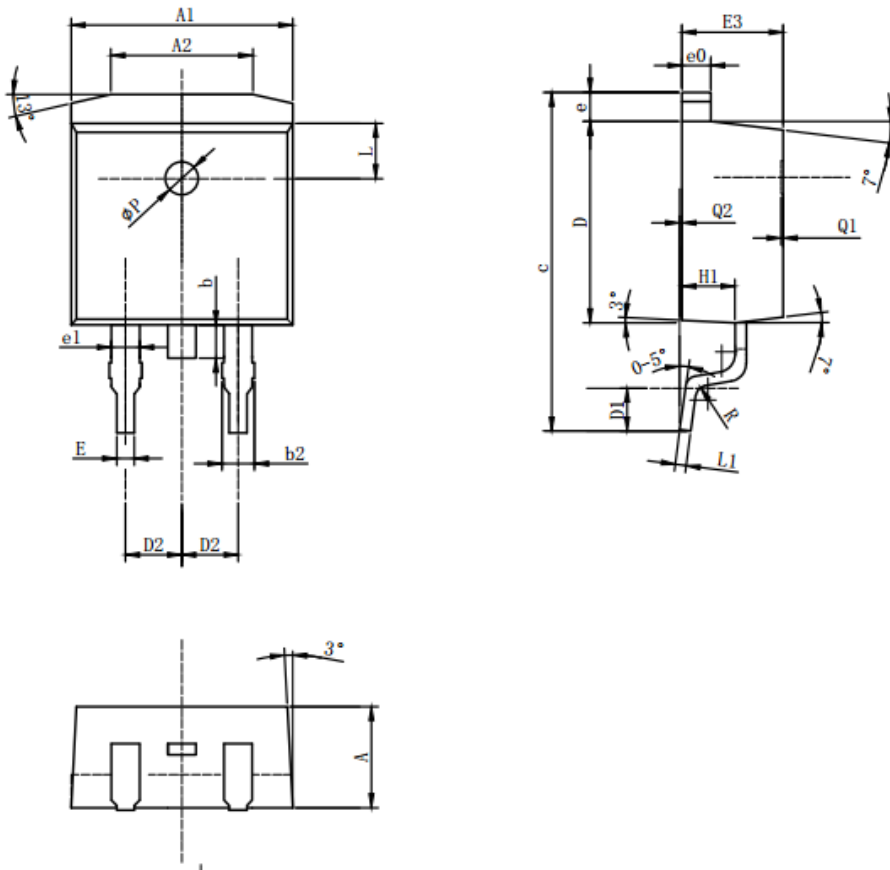


Figure 9. Normalized Maximum Transient Thermal Impedance



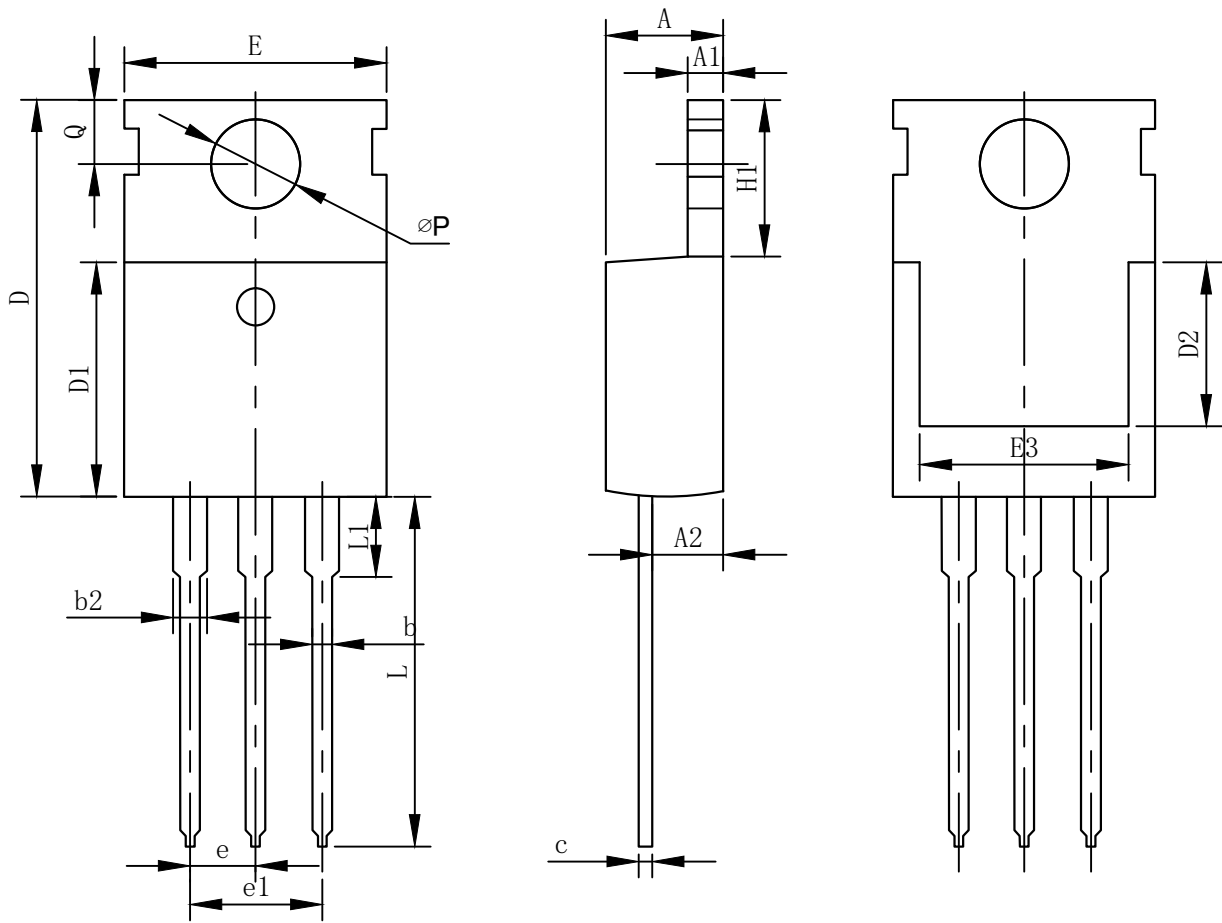
TO-263 Package Information



COMMON DIMENSIONS

SYMBOL	mm		
	MIN	NOM	MAX
A	4.52	4.57	4.62
A1	9.95	10.00	10.05
A2	6.30	6.40	6.50
b	1.30	1.50	1.70
b2	1.17	1.27	1.37
c	14.80	15.00	15.20
D	9.05	9.10	9.15
D1	1.90	2.10	2.30
D2	-	2.54	-
E	-	0.80	-
E3	-	4.57	-
e	-	1.30	-
e0	-	1.30	-
e1	1.73	3	-
H1	-	2.40	-
L	-	2.50	-
L1	-	0.50	-
φP	-	1.50	-
R	-	0.50	-
Q1	0.10	-	0.15
Q2	0	-	0.02

TO-220 Package information



COMMON DIMENSIONS

SYMBOL	mm		
	MIN	NOM	MAX
A	4.37	4.57	4.70
A1	1.25	1.30	1.40
A2	2.20	2.40	2.60
b	0.70	0.80	0.95
b2	1.70	1.27	1.47
c	0.45	0.50	0.60
D	15.10	15.60	16.10
D1	8.80	9.10	9.40
D2	5.50	-	-
E	9.70	10.00	10.30
E3	7.00	-	-
e	2.54BSC		
e1	5.08BSC		
H1	6.25	6.50	6.85
L	12.75	13.50	13.80
L1	-	3.10	3.40
ϕP	3.40	3.60	3.80
Q	2.60	2.80	3.00