

Product Summary

BV _{DSS}	R _{DS(ON)}	Package	I _D T _C = +25°C
600V	3.5Ω@V _{GS} = 10V	TO220AB (Type TH)	3.3A

Description

This new generation MOSFET features low on-resistance and fast switching, making it ideal for high efficiency power management applications.

Applications

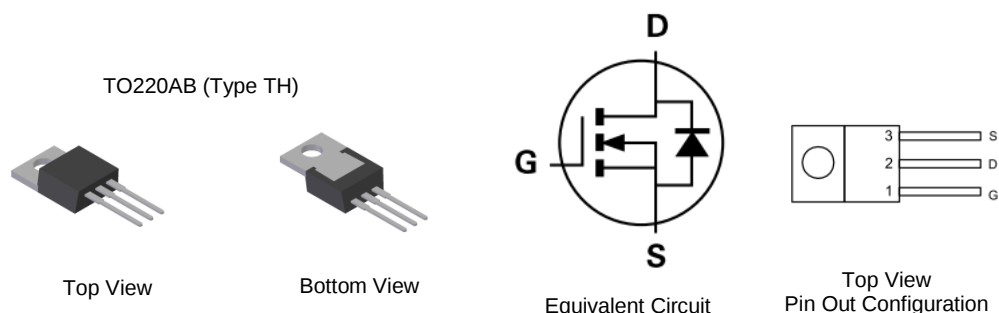
- Motor Control
- Backlighting
- DC-DC Converters
- Power Management Functions

Features

- Low Input Capacitance
- High BV_{DSS} Rating for Power Application
- Low Input/Output Leakage
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

Mechanical Data

- Case: TO220AB (Type TH)
- Case Material: Molded Plastic, "Green" Molding Compound, UL Flammability Classification Rating 94V-0
- Terminals: Matte Tin Finish Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 [Ⓔ]
- Terminal Connections: See Diagram Below
- Weight: 1.85 grams (Approximate)

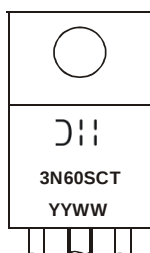


Ordering Information (Note 4)

Part Number	Case	Packaging
DMG3N60SCT	TO220AB (Type TH)	50 Pieces/Tube

- Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
 2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information



DII = Manufacturer's Marking
 3N60SCT = Product Type Marking Code
 YYWW = Date Code Marking
 YY or YY = Last Two Digits of Year (ex: 16 = 2016)
 WW or WW = Week Code (01 to 53)

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	V _{DSS}	600	V
Gate-Source Voltage	V _{GSS}	±30	V
Continuous Drain Current (Note 5) V _{GS} = 10V	I _D	3.3 2	A
Maximum Body Diode Forward Current (Note 5)	I _S	2.5	A
Pulsed Drain Current (10μs Pulse, Duty Cycle = 1%)	I _{DM}	3.7	A
Avalanche Current, L = 60mH (Note 6)	I _{AS}	1	A
Avalanche Energy, L = 60mH (Note 6)	E _{AS}	30	mJ
Peak Diode Recovery dv/dt	dv/dt	2.7	V/ns

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 5)	P _D	104 42	W
Thermal Resistance, Junction to Ambient (Note 5)	R _{θJA}	57	°C/W
Thermal Resistance, Junction to Case (Note 5)	R _{θJC}	1.2	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV _{DSS}	600	—	—	V	V _{GS} = 0V, I _D = 250μA
Zero Gate Voltage Drain Current	I _{DSS}	—	—	1	μA	V _{DS} = 600V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	100	nA	V _{GS} = ±30V, V _{DS} = 0V
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	V _{GS(TH)}	2.0	3.1	4.0	V	V _{DS} = V _{GS} , I _D = 250μA
Static Drain-Source On-Resistance	R _{DS(ON)}	—	2.7	3.5	Ω	V _{GS} = 10V, I _D = 1.5A
Diode Forward Voltage	V _{SD}	—	0.87	1.5	V	V _{GS} = 0V, I _S = 3.0A
DYNAMIC CHARACTERISTICS (Note 6)						
Input Capacitance	C _{iss}	—	354	—	pF	V _{DS} = 25V, f = 1.0MHz, V _{GS} = 0
Output Capacitance	C _{oss}	—	41	—		
Reverse Transfer Capacitance	C _{rss}	—	4	—		
Gate Resistance	R _G	—	2.6	—	Ω	V _{DS} = 0V, V _{GS} = 0V, f = 1.0MHz
Total Gate Charge	Q _g	—	12.6	—	nC	V _{DD} = 480V, I _D = 2.5A, V _{GS} = 10V
Gate-Source Charge	Q _{gs}	—	1.7	—		
Gate-Drain Charge	Q _{gd}	—	7.1	—		
Turn-On Delay Time	t _{D(ON)}	—	10.6	—	ns	V _{DD} = 300V, R _G = 25Ω, I _D = 2.5A, V _{GS} = 10V
Turn-On Rise Time	t _R	—	22	—		
Turn-Off Delay Time	t _{D(OFF)}	—	34	—		
Turn-Off Fall Time	t _F	—	28	—		
Body Diode Reverse Recovery Time	t _{RR}	—	198	—	ns	di/dt = 100A/μs, V _{DS} = 100V, I _F = 2.5A
Body Diode Reverse Recovery Charge	Q _{RR}	—	952	—	nC	

- Notes:
- Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
 - Guaranteed by design. Not subject to production testing.
 - Short duration pulse test used to minimize self-heating effect.

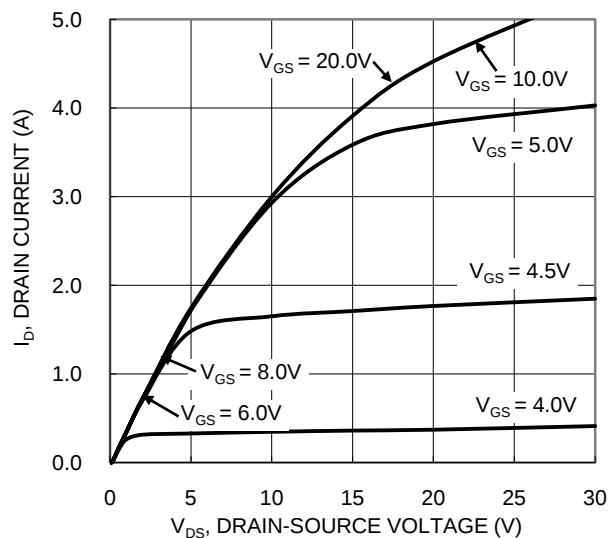


Figure 1. Typical Output Characteristic

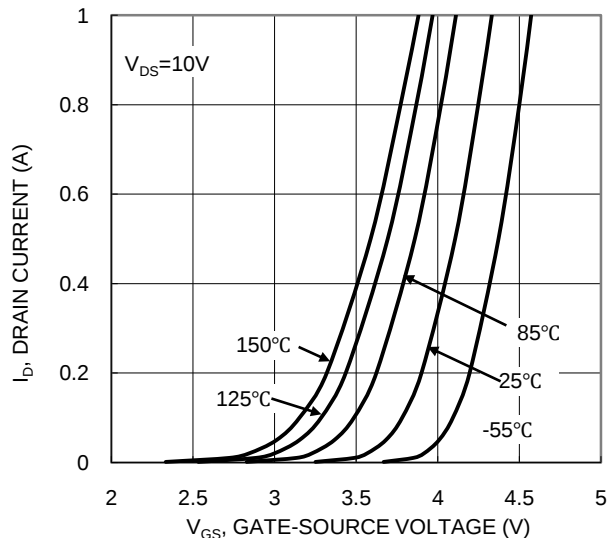


Figure 2. Typical Transfer Characteristic

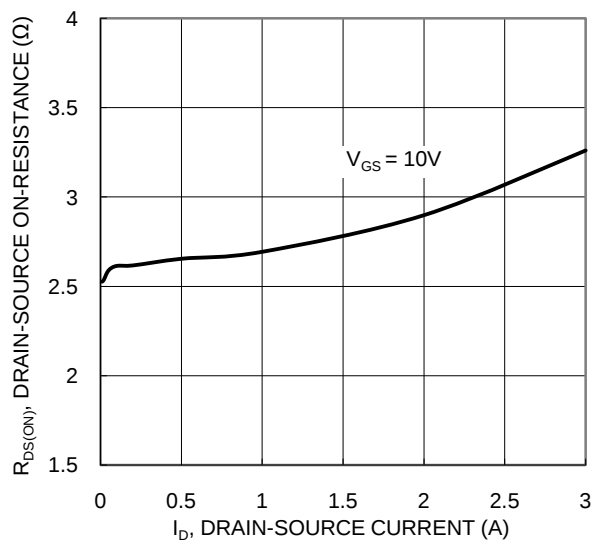


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

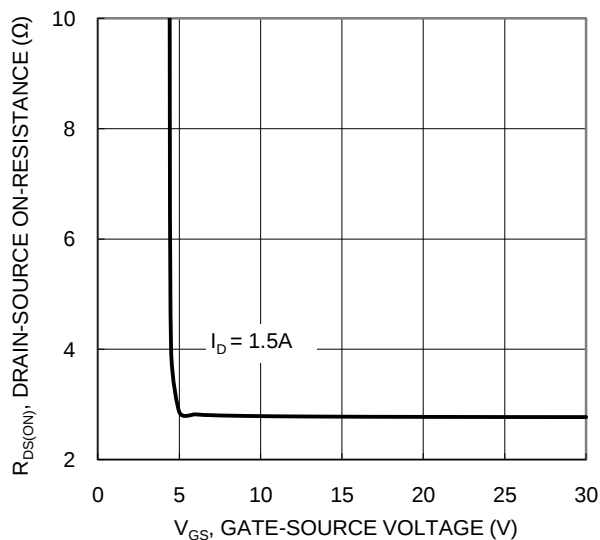


Figure 4. Typical Transfer Characteristic

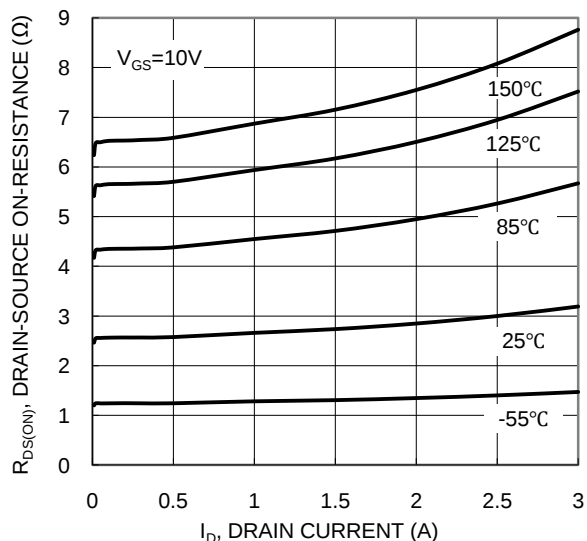


Figure 5. Typical On-Resistance vs. Drain Current and Temperature

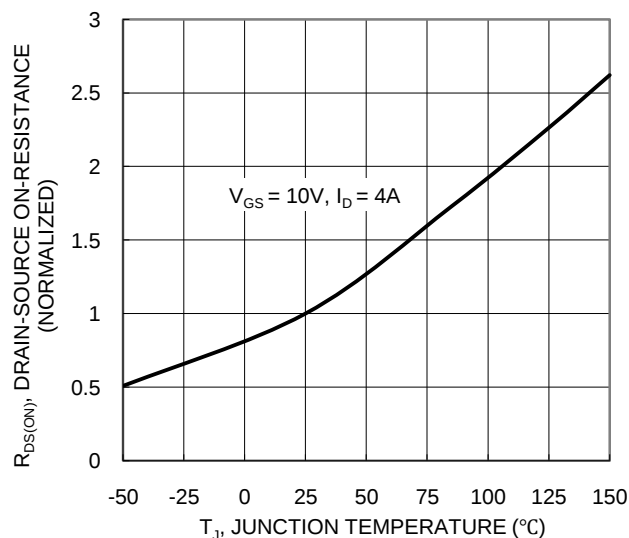
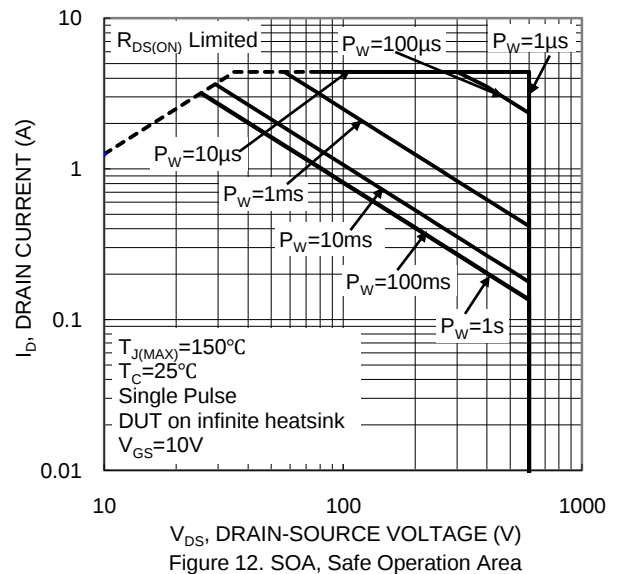
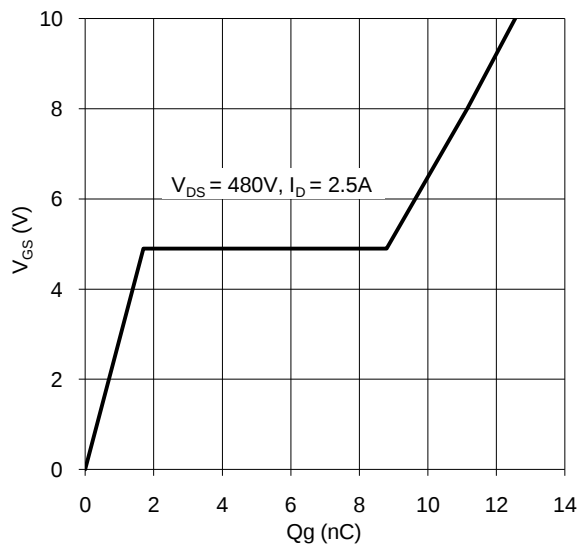
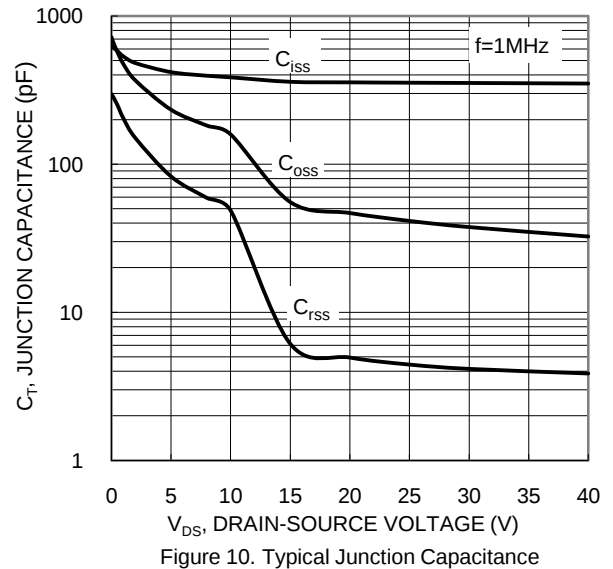
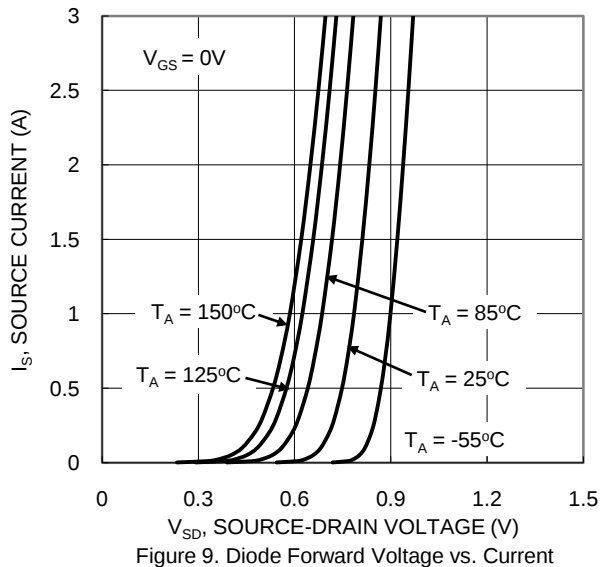
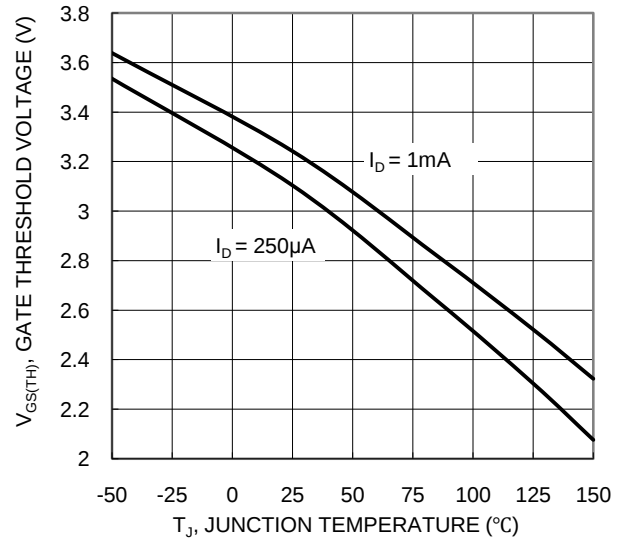
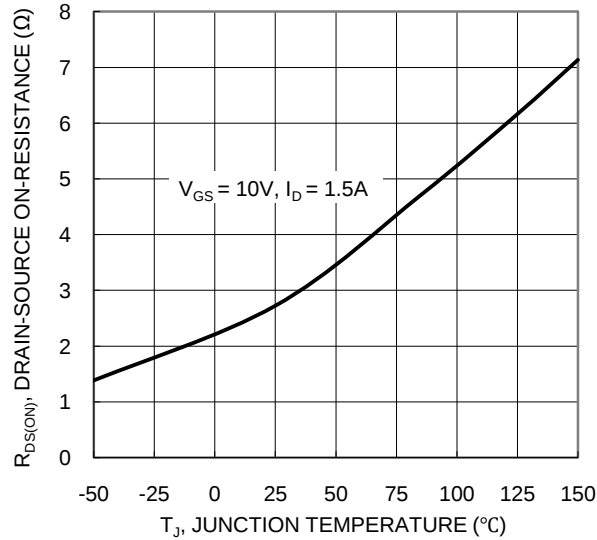


Figure 6. On-Resistance Variation with Temperature



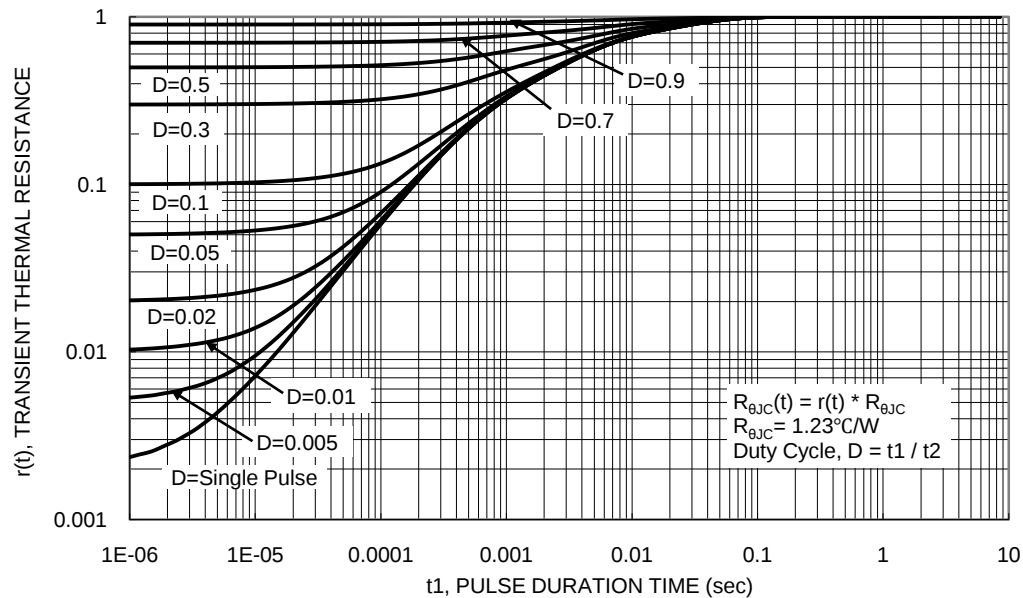
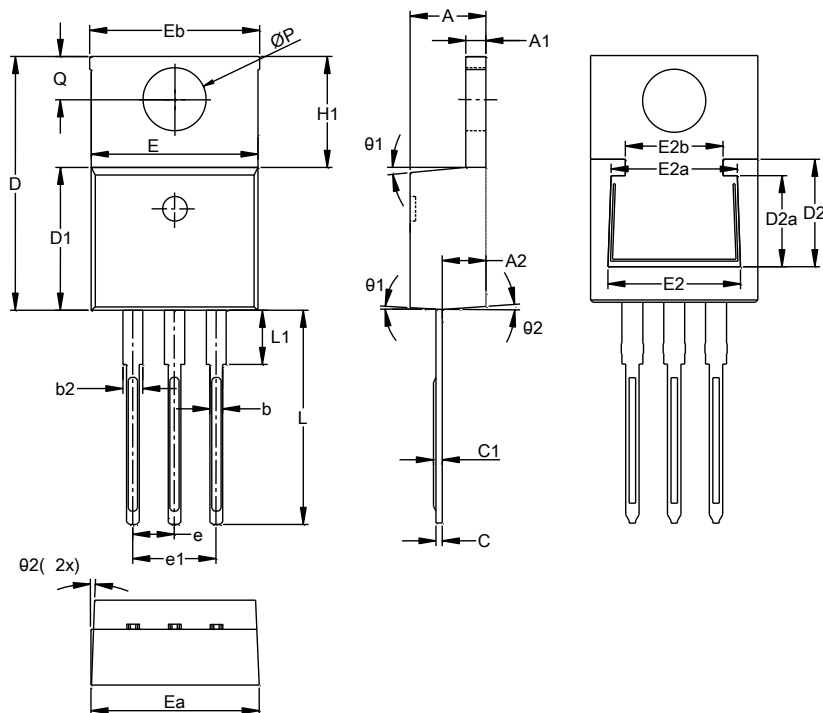


Figure 13. Transient Thermal Resistance

Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

TO220AB (Type TH)



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Dim	Min	Max	Typ
A	4.27	4.87	4.57
A1	1.12	1.42	1.27
A2	2.39	2.99	2.69
b	0.70	1.01	0.81
b2	1.17	1.50	1.27
c	0.30	0.53	0.38
c1	0.38	0.72	0.56
D	14.60	15.40	15.00
D1	8.40	9.00	8.70
D2	5.33	6.63	6.33
D2a	4.54	5.84	5.54
e	2.54 BSC		
e1	5.08 BSC		
E	9.88	10.50	10.16
Ea	9.90	10.45	10.10
Eb	9.90	10.65	10.25
E2	7.06	8.36	8.06
E2a	6.67	7.97	7.67
E2b	4.94	6.24	5.94
H1	5.70	6.65	6.30
L	13.00	13.80	13.40
L1	-	4.10	3.75
Q	2.50	2.99	2.74
ϕP	3.70	3.99	3.84
θ_1	4°	10°	7°
θ_2	0°	6°	3°
All Dimensions in mm			

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