

Product Summary

BV _{DSS}	R _{DS(ON)}	I _D T _C = +25°C
600V	0.75Ω @ V _{GS} = 10V	12A

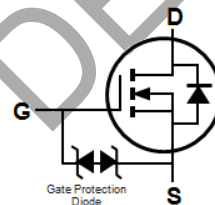
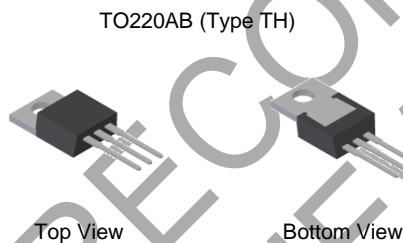
Description and Applications

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

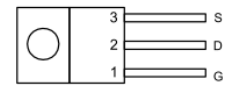
- Motor controls
- Backlighting
- DC-DC converters
- Power management functions



ESD PROTECTED



Equivalent Circuit



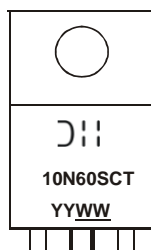
Top View
Pin Out Configuration

Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
DMG10N60SCT	TO220AB (Type TH)	50 pieces	Tube

- Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
 2. See <https://www.diodes.com/quality/lead-free/> 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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



- ⊏ = Manufacturer's Marking
- 10N60SCT = Product Type Marking Code
- YYWW = Date Code Marking
- YY = Last Two Digits of Year (ex: 22 = 2022)
- 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	Steady State	T _C = +25°C	I _D	12	A
		T _C = +100°C		7.9	
Continuous Drain Current (Note 5) V _{GS} = 10V	Steady State	T _A = +25°C	I _D	1.5	A
Maximum Body Diode Forward Current (Note 5)			I _S	12	A
Pulsed Drain Current (10μs Pulse, Duty Cycle = 1%)			I _{DM}	15	A
Avalanche Current, L = 60mH (Note 6)			I _{AS}	4.3	A
Avalanche Energy, L = 60mH (Note 6)			E _{AS}	550	mJ

Thermal Characteristics

Characteristic			Symbol	Value	Unit
Total Power Dissipation (Note 5)		T _C = +25°C	P _D	178	W
		T _C = +100°C		71	
Total Power Dissipation (Note 5)		T _A = +25°C	P _D	2.5	W
Thermal Resistance, Junction to Ambient (Note 5)			R _{θJA}	49	°C/W
Thermal Resistance, Junction to Case (Note 5)			R _{θJC}	0.7	
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}	—	—	10	μA	V _{GS} = ±24V, V _{DS} = 0V
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	V _{GS(TH)}	2	3.2	4	V	V _{DS} = V _{GS} , I _D = 250μA
Static Drain-Source On-Resistance	R _{DS(ON)}	—	0.6	0.75	Ω	V _{GS} = 10V, I _D = 5A
Diode Forward Voltage	V _{SD}	—	—	1	V	V _{GS} = 0V, I _S = 1A
DYNAMIC CHARACTERISTICS (Note 6)						
Input Capacitance	C _{iss}	—	1587	—	pF	V _{DS} = 25V, f = 1.0MHz V _{GS} = 0V
Output Capacitance	C _{oss}	—	149	—		
Reverse Transfer Capacitance	C _{rss}	—	10	—		
Gate Resistance	R _G	—	1.5	—	Ω	V _{DS} = 0V, V _{GS} = 0V, f = 1.0MHz
Total Gate Charge (V _{GS} = 10V)	Q _g	—	35	—	nC	V _{DS} = 480V, I _D = 10A V _{GS} = 10V
Gate-Source Charge	Q _{gs}	—	6	—		
Gate-Drain Charge	Q _{gd}	—	13	—		
Turn-On Delay Time	t _{D(ON)}	—	25	—	ns	V _{DS} = 300V, R _G = 25Ω, I _D = 10A V _{GS} = 10V
Turn-On Rise Time	t _R	—	45	—		
Turn-Off Delay Time	t _{D(OFF)}	—	97	—		
Turn-Off Fall Time	t _F	—	48	—		
Body Diode Reverse Recovery Time	t _{RR}	—	319	—	ns	V _{DS} = 100V, I _F = 10A di/dt = 100A/μs
Body Diode Reverse Recovery Charge	Q _{RR}	—	3.5	—	μC	

- Notes:
- Device mounted on an infinite heatsink.
 - Guaranteed by design. Not subject to production testing.
 - Short duration pulse test used to minimize self-heating effect.

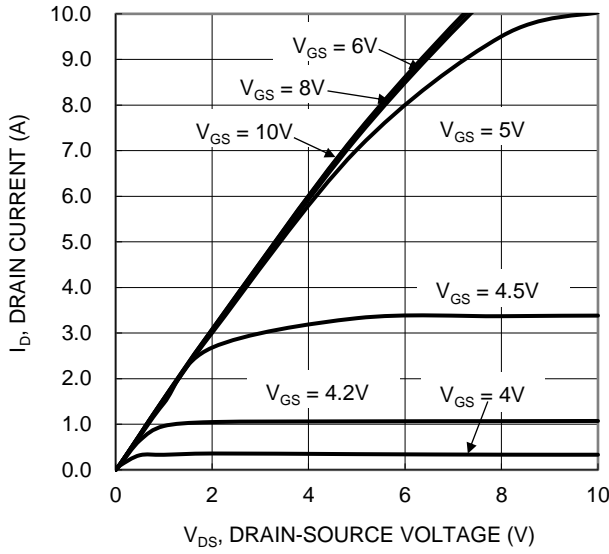


Figure 1. Typical Output Characteristic

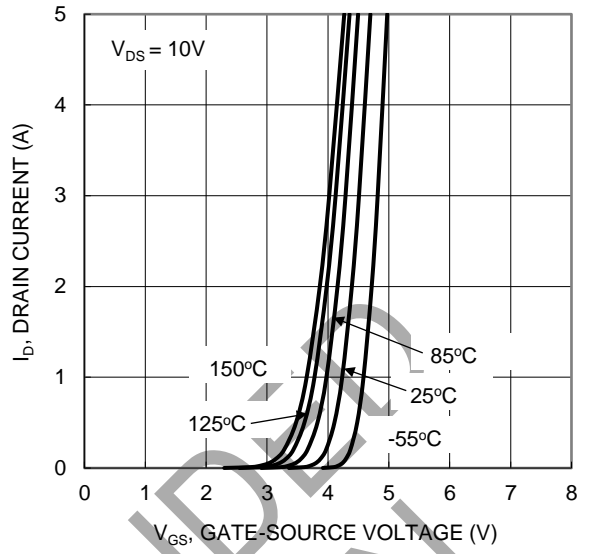


Figure 2. Typical Transfer Characteristic

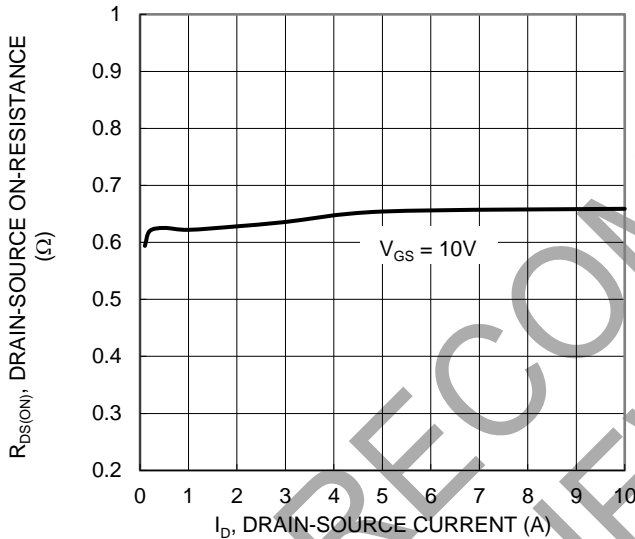


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

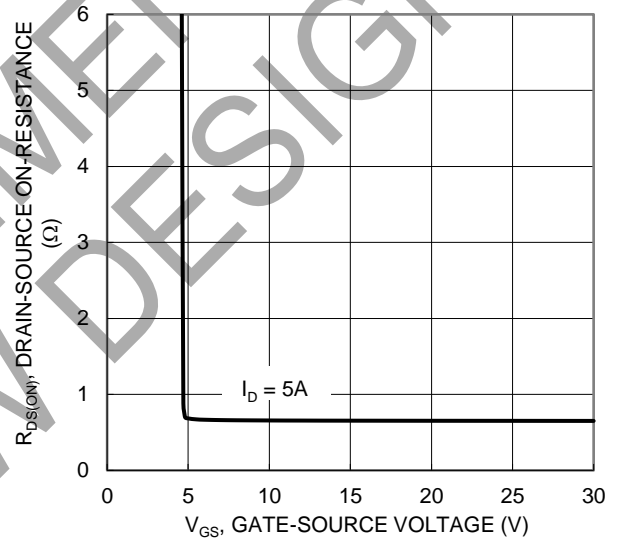


Figure 4. Typical Transfer Characteristic

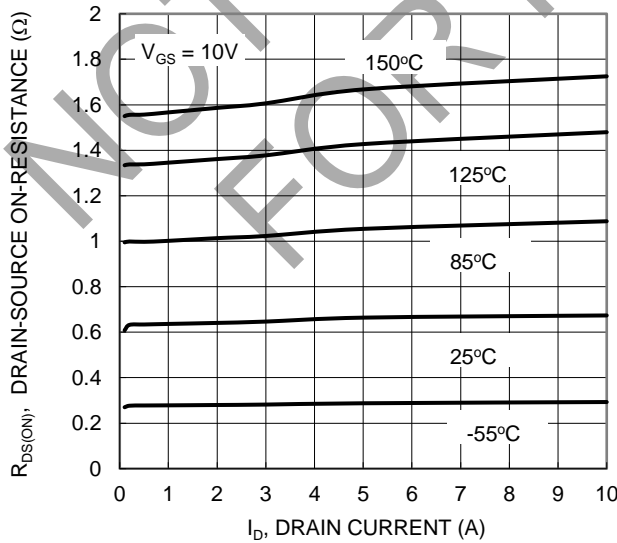


Figure 5. Typical On-Resistance vs. Drain Current and Junction Temperature

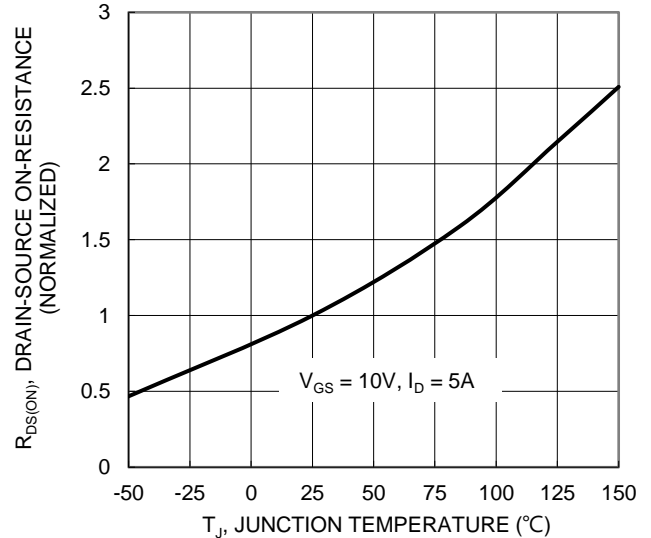


Figure 6. On-Resistance Variation with Junction Temperature

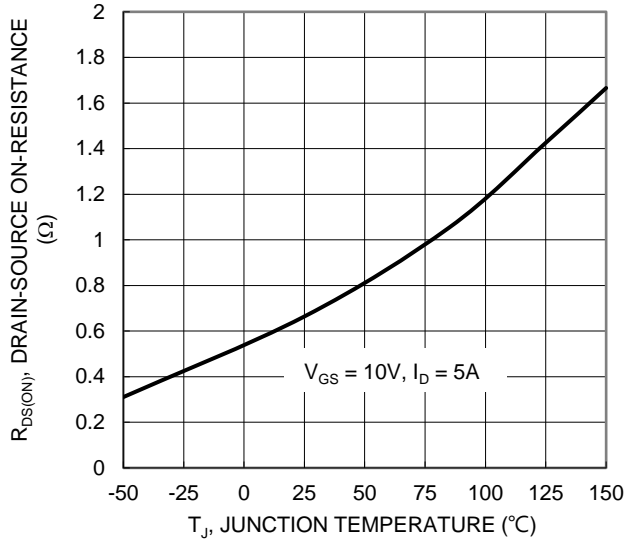


Figure 7. On-Resistance Variation with Junction Temperature

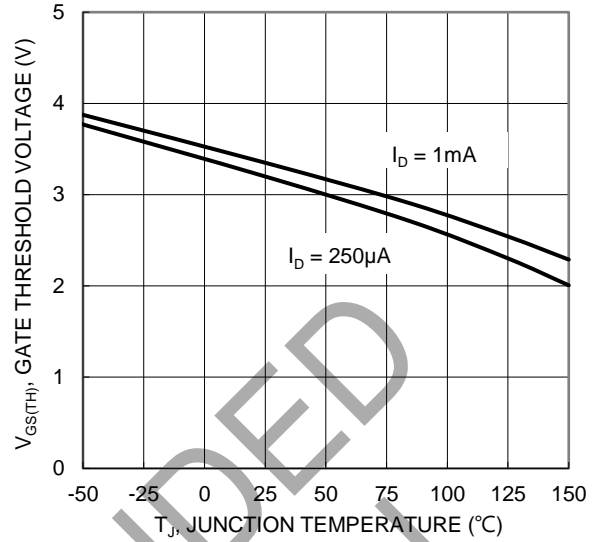


Figure 8. Gate Threshold Variation vs. Junction Temperature

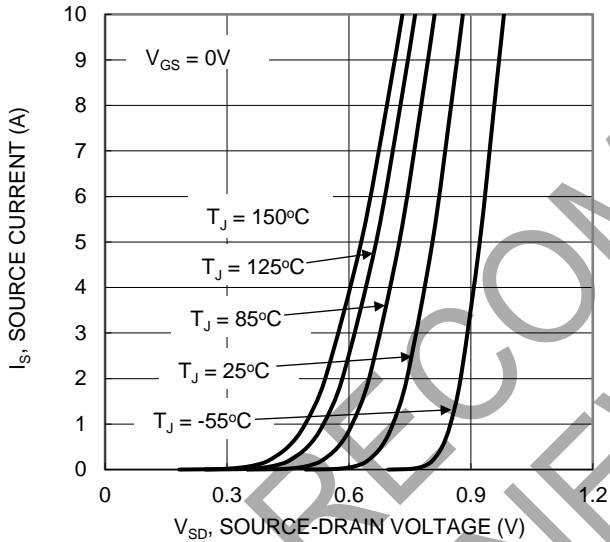


Figure 9. Diode Forward Voltage vs. Current

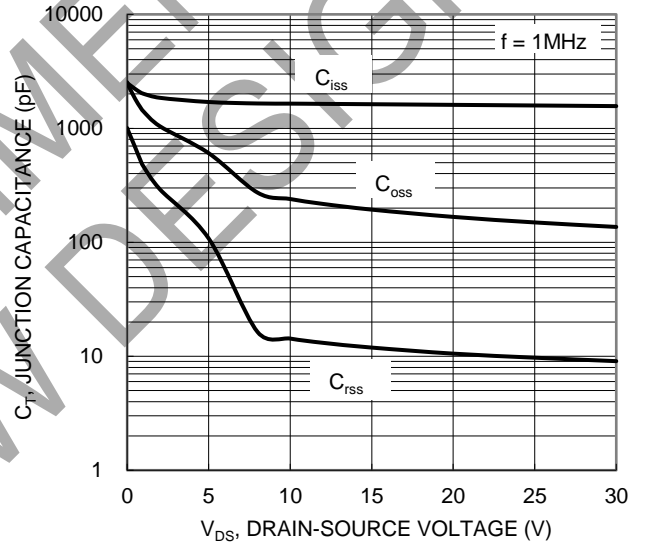


Figure 10. Typical Junction Capacitance

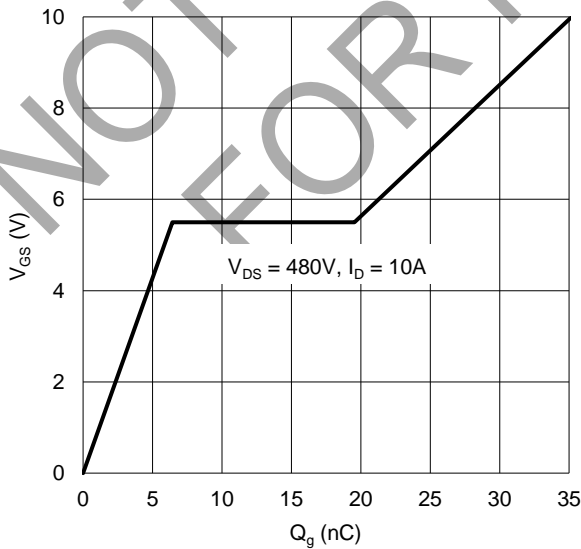


Figure 11. Gate Charge

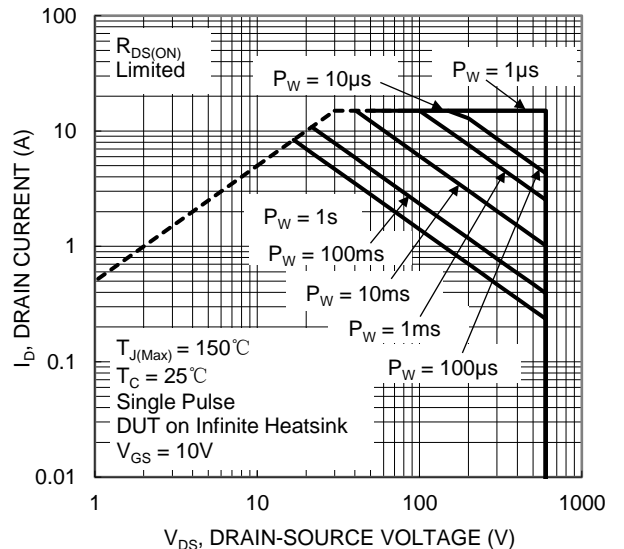
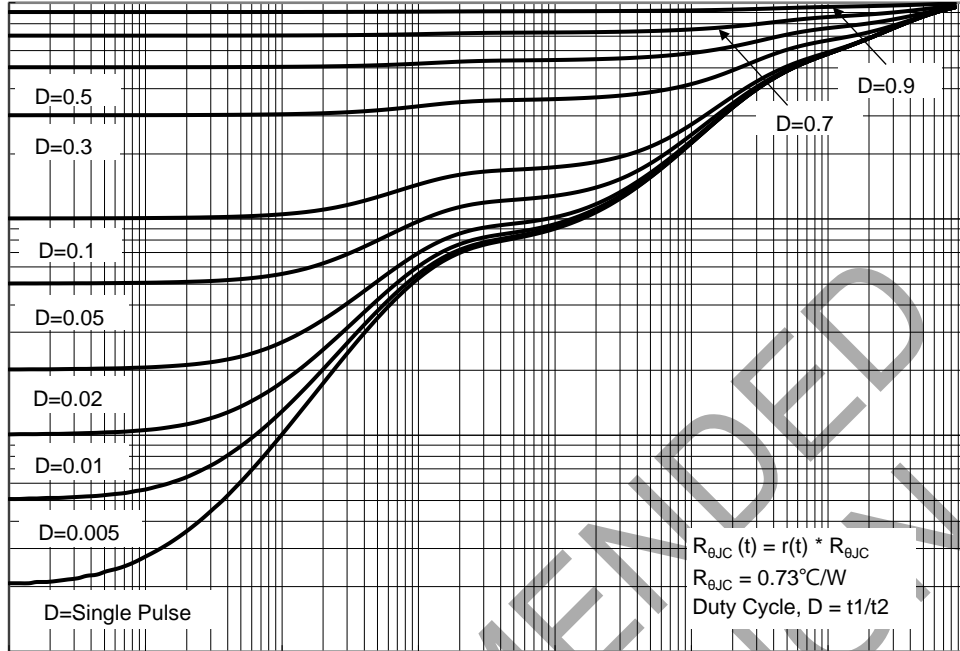


Figure 12. SOA, Safe Operation Area

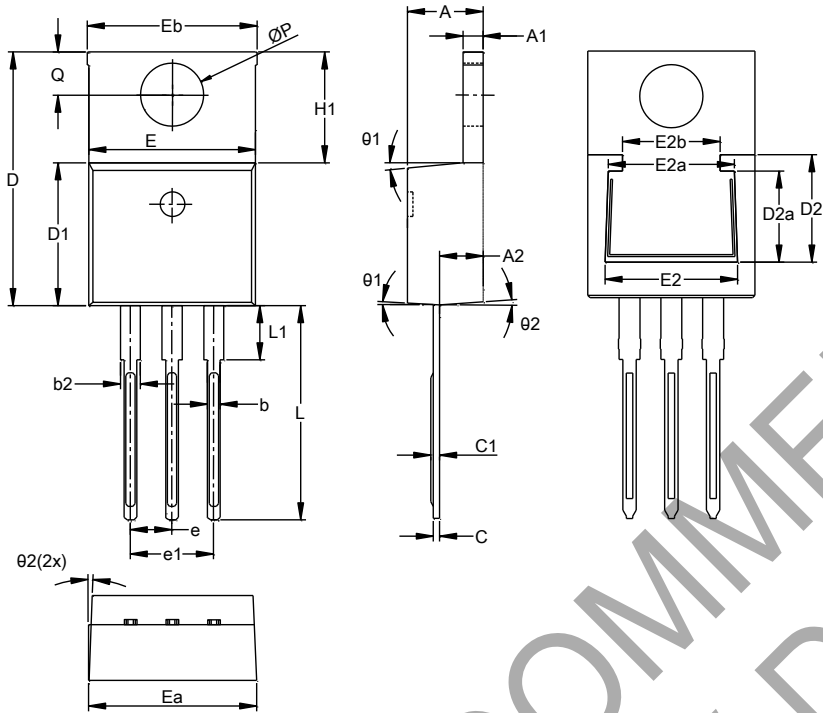


NOT RECOMMENDED FOR NEW DESIGN

Package Outline Dimensions

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

TO220AB (Type TH)



TO220AB (Type TH)			
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
ØP	3.70	3.99	3.84
θ1	4°	10°	7°
θ2	0°	6°	3°
All Dimensions in mm			

NOT RECOMMENDED FOR NEW DESIGN

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