

AUFR3710Z-VB Datasheet

N-Channel 100-V (D-S) MOSFET

PRODUCT SUMMARY		
V _{DS} (V)	R _{D(on)} (Ω)	I _D (A)
100	0.0085 at V _{GS} = 10 V	85
	0.0105 at V _{GS} = 4.5 V	70

FEATURES

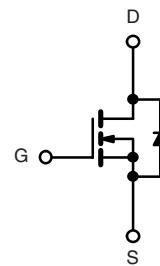
- TrenchFET® Power MOSFET
- 100 % R_g Tested
- 100 % UIS Tested


 RoHS
 COMPLIANT

APPLICATIONS

- Primary Side Switch
- Isolated DC/DC Converter

TO-252



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS T_A = 25 °C, unless otherwise noted

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V _{DS}	100	V
Gate-Source Voltage	V _{GS}	± 20	
Continuous Drain Current (T _J = 150 °C)	I _D	85	A
		75 ^a	
Pulsed Drain Current	I _{DM}	300	A
Avalanche Current	I _{AS}	75	
Single Pulse Avalanche Energy ^b	E _{AS}	280	mJ
Maximum Power Dissipation ^b	P _D	176	W
		3.75	
Operating Junction and Storage Temperature Range	T _J , T _{stg}	- 55 to 175	°C

THERMAL RESISTANCE RATINGS

Parameter	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient ^b	R _{thJA}	40	50	°C/W
Maximum Junction-to-Case		0.85	1.1	

Notes:

a. Package limited.

b. Surface mounted on 1" x 1" FR4 board.

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

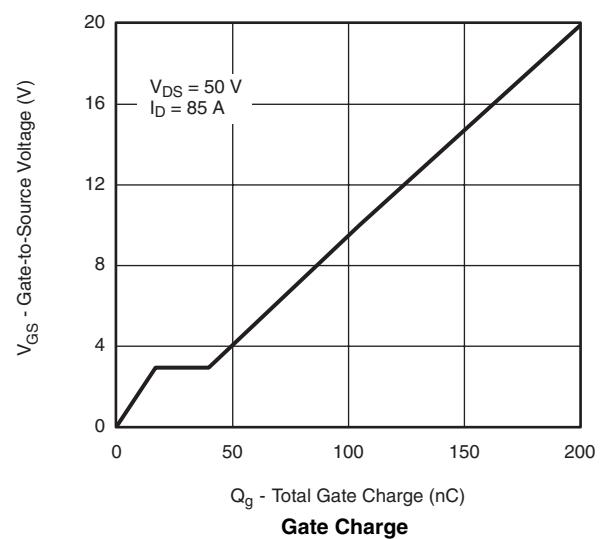
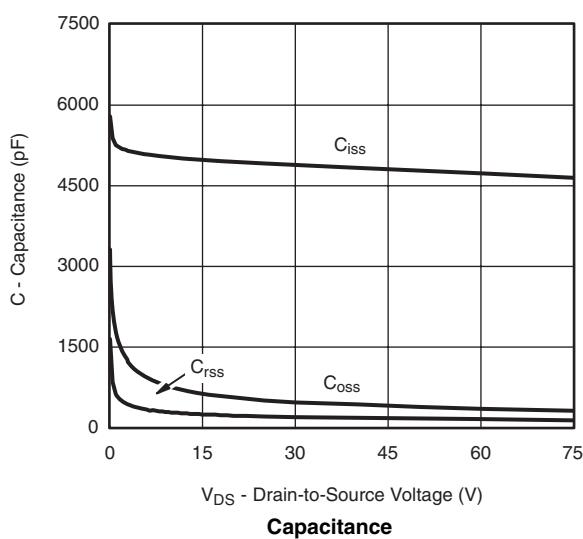
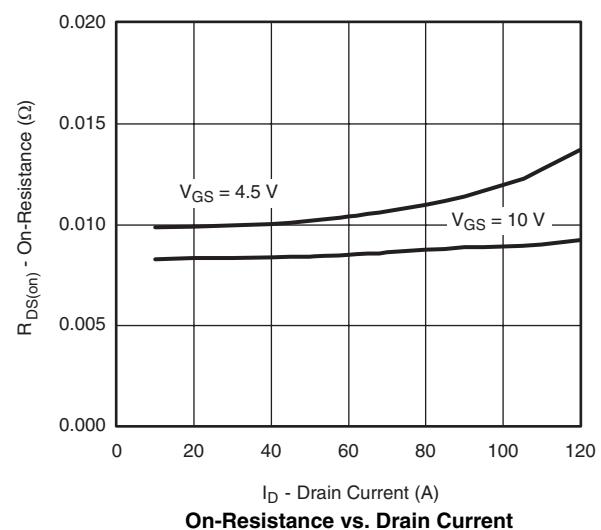
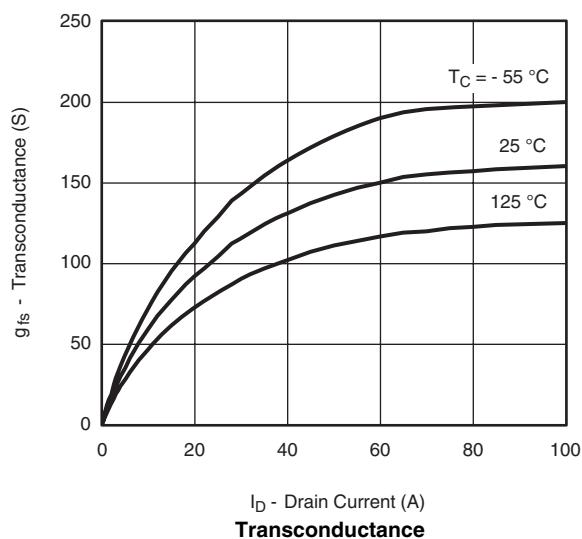
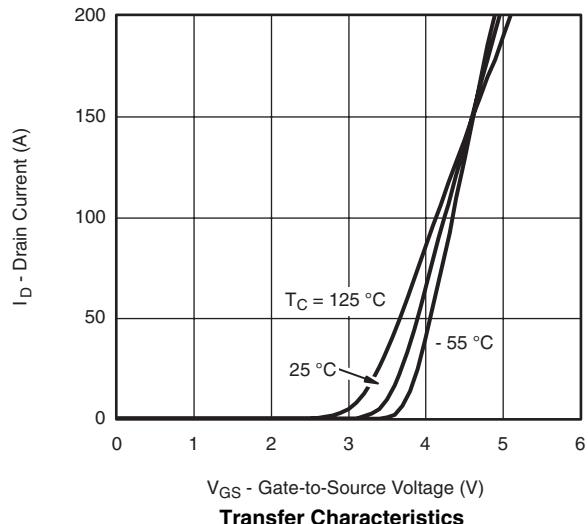
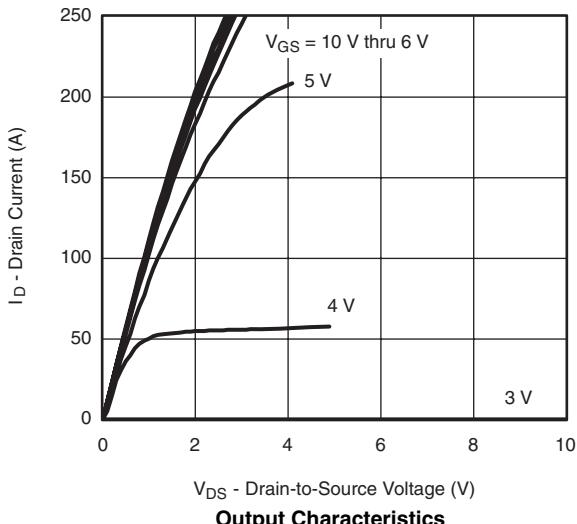
SPECIFICATIONS $T_J = 25^\circ\text{C}$, unless otherwise noted

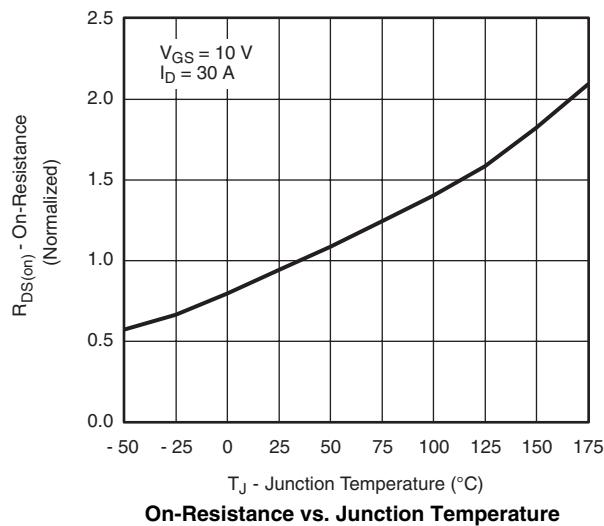
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V_{DS}	$V_{GS} = 0 \text{ V}$, $I_D = 250 \mu\text{A}$	100			V
Gate-Threshold Voltage	$V_{GS(\text{th})}$	$V_{DS} = V_{GS}$, $I_D = 250 \mu\text{A}$	1		4	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0 \text{ V}$, $V_{GS} = \pm 20 \text{ V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 100 \text{ V}$, $V_{GS} = 0 \text{ V}$			1	
		$V_{DS} = 80 \text{ V}$, $V_{GS} = 0 \text{ V}$, $T_J = 125^\circ\text{C}$			50	
		$V_{DS} = 80 \text{ V}$, $V_{GS} = 0 \text{ V}$, $T_J = 175^\circ\text{C}$			250	
On-State Drain Current ^a	$I_{D(\text{on})}$	$V_{DS} = \geq 5 \text{ V}$, $V_{GS} = 10 \text{ V}$	50			A
Drain-Source On-State Resistance ^a	$R_{DS(\text{on})}$	$V_{GS} = 10 \text{ V}$, $I_D = 20 \text{ A}$		0.0085		
		$V_{GS} = 4.5 \text{ V}$, $I_D = 20 \text{ A}$		0.0105		
		$V_{GS} = 10 \text{ V}$, $I_D = 20 \text{ A}$, $T_J = 125^\circ\text{C}$		0.017		
		$V_{GS} = 10 \text{ V}$, $I_D = 20 \text{ A}$, $T_J = 175^\circ\text{C}$		0.022		
Forward Transconductance ^a	g_{fs}	$V_{DS} = 15 \text{ V}$, $I_D = 20 \text{ A}$	25			S
Dynamic^b						
Input Capacitance	C_{iss}	$V_{GS} = 0 \text{ V}$, $V_{DS} = 25 \text{ V}$, $f = 1 \text{ MHz}$		4000		
Output Capacitance	C_{oss}			565		
Reverse Transfer Capacitance	C_{rss}			205		
Total Gate Charge ^c	Q_g	$V_{DS} = 50 \text{ V}$, $V_{GS} = 10 \text{ V}$, $I_D = 45 \text{ A}$		105	160	
Gate-Source Charge ^c	Q_{gs}			17		
Gate-Drain Charge ^c	Q_{gd}			23		
Turn-On Delay Time ^c	$t_{d(\text{on})}$	$V_{DD} = 20 \text{ V}$, $R_L = 0.6 \Omega$ $I_D \geq 45 \text{ A}$, $V_{GEN} = 10 \text{ V}$, $R_g = 2.5 \Omega$		12	25	
Rise Time ^c	t_r			90	135	
Turn-Off Delay Time ^c	$t_{d(\text{off})}$			55	85	
Fall Time ^c	t_f			130	195	
Source-Drain Diode Ratings and Characteristics $T_C = 25^\circ\text{C}^b$						
Continuous Current	I_S				85	
Pulsed Current	I_{SM}				140	
Forward Voltage ^a	V_{SD}	$I_F = 45 \text{ A}$, $V_{GS} = 0 \text{ V}$		1.0	1.5	V
Reverse Recovery Time	t_{rr}	$I_F = 50 \text{ A}$, $dI/dt = 100 \text{ A}/\mu\text{s}$		85	140	ns
Peak Reverse Recovery Current	$I_{RM(\text{REC})}$			4.5	7	A
Reverse Recovery Charge	Q_{rr}			0.17	0.35	μC

Notes:

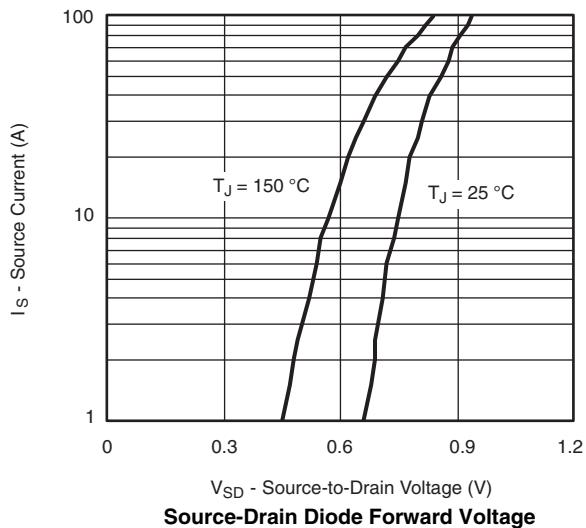
- a. Pulse test; pulse width $\leq 300 \mu\text{s}$, duty cycle $\leq 2\%$.
- b. Guaranteed by design, not subject to production testing.
- c. Independent of operating temperature.

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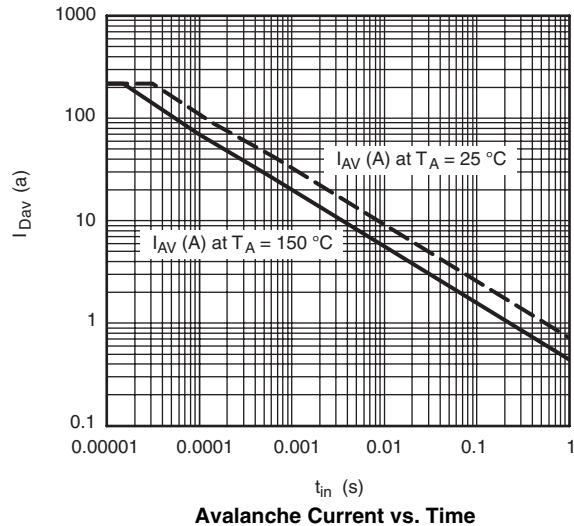
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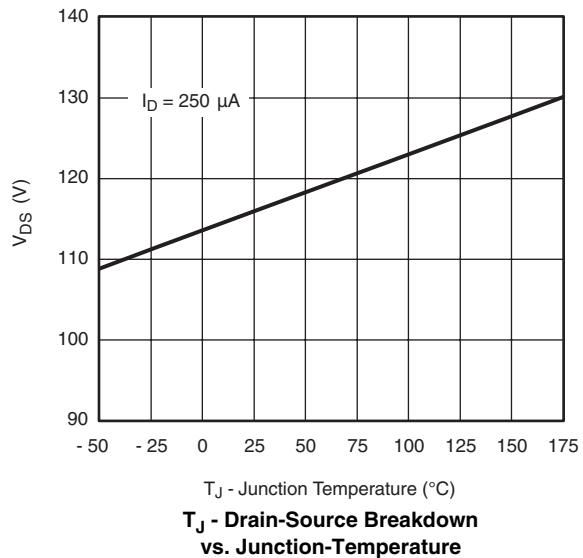
On-Resistance vs. Junction Temperature



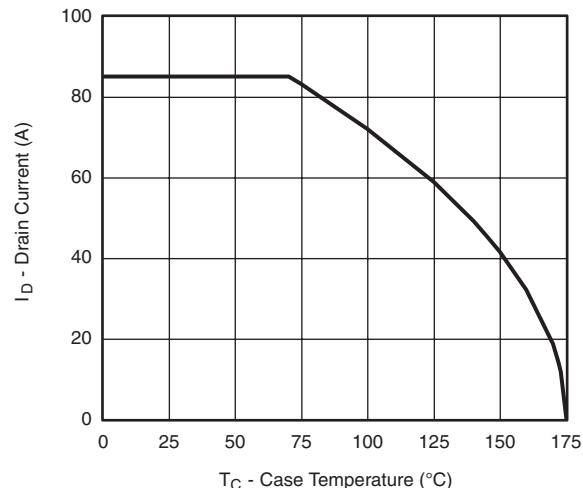
Source-Drain Diode Forward Voltage



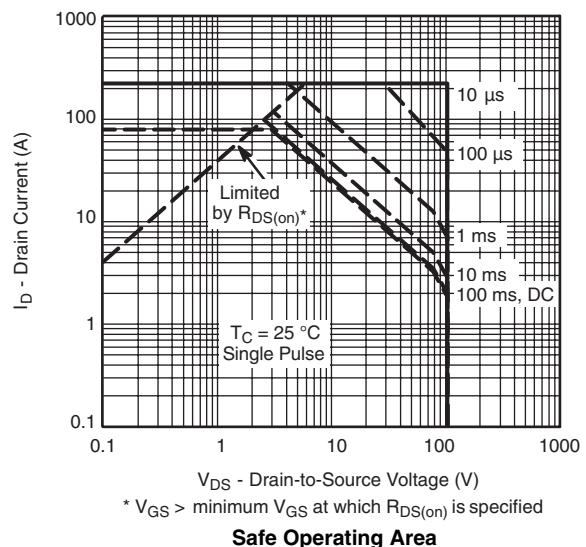
Avalanche Current vs. Time

 T_J - Drain-Source Breakdown vs. Junction-Temperature

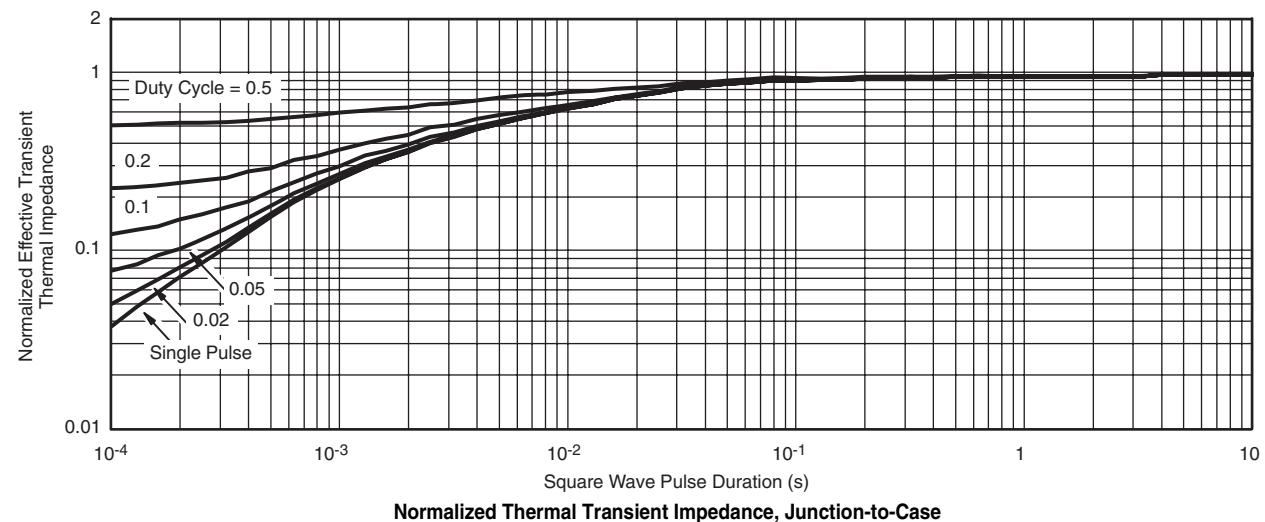
THERMAL RATINGS



**Maximum Avalanche and Drain Current
vs. Case Temperature**

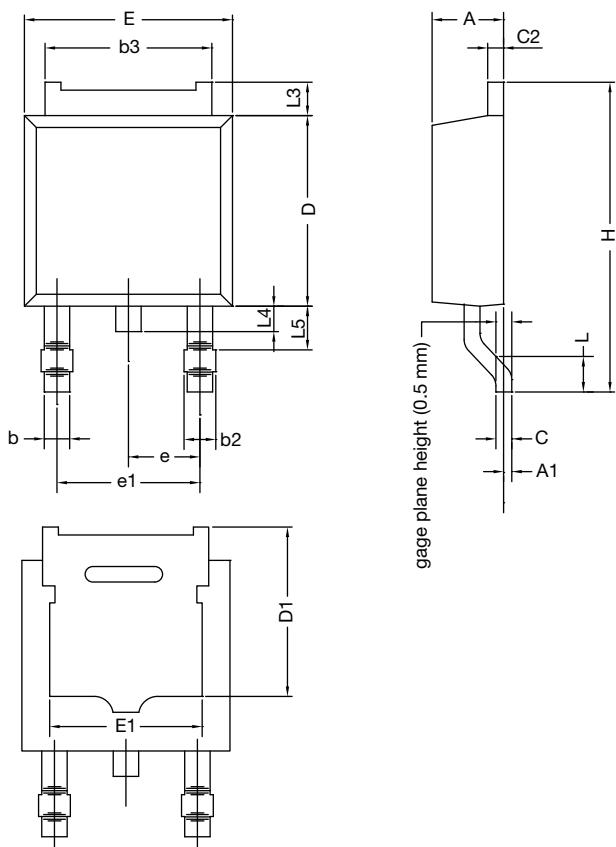


Safe Operating Area



Normalized Thermal Transient Impedance, Junction-to-Case

TO-252AA CASE OUTLINE



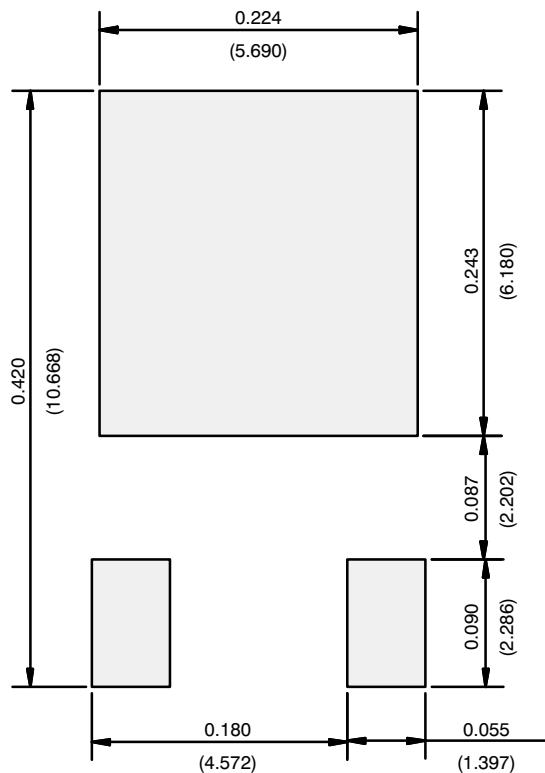
DIM.	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	2.18	2.38	0.086	0.094
A1	-	0.127	-	0.005
b	0.64	0.88	0.025	0.035
b2	0.76	1.14	0.030	0.045
b3	4.95	5.46	0.195	0.215
C	0.46	0.61	0.018	0.024
C2	0.46	0.89	0.018	0.035
D	5.97	6.22	0.235	0.245
D1	5.21	-	0.205	-
E	6.35	6.73	0.250	0.265
E1	4.32	-	0.170	-
H	9.40	10.41	0.370	0.410
e	2.28 BSC		0.090 BSC	
e1	4.56 BSC		0.180 BSC	
L	1.40	1.78	0.055	0.070
L3	0.89	1.27	0.035	0.050
L4	-	1.02	-	0.040
L5	1.14	1.52	0.045	0.060

ECN: X12-0247-Rev. M, 24-Dec-12
 DWG: 5347

Note

- Dimension L3 is for reference only.

RECOMMENDED MINIMUM PADS FOR DPAK (TO-252)



Recommended Minimum Pads
Dimensions in Inches/(mm)

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