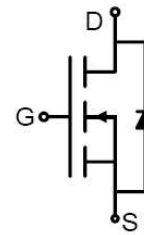


Feature

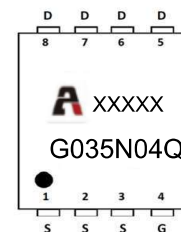
- 40V,70A
 $R_{DS(ON)} < 3.2m\Omega @ V_{GS}=10V$ (TYP:2.8m Ω)
 $R_{DS(ON)} < 5.2m\Omega @ V_{GS}=4.5V$ (TYP:4.4m Ω)
- Split Gate Trench Technology
- Lead free product is acquired
- Excellent $R_{DS(ON)}$ and Low Gate Charge



Schematic Diagram

Application

- PWM applications
- Load Switch
- Power management



Marking and pin Assignment

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
G035N04	APG035N04Q	PDFN3X3-8L	13 inch	-	5000

ABSOLUTE MAXIMUM RATINGS ($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($T_a=25^{\circ}\text{C}$)	I_D	70	A
Continuous Drain Current ($T_a=100^{\circ}\text{C}$)	I_D	51	A
Pulsed Drain Current ⁽¹⁾	I_{DM}	280	A
Single Pulsed Avalanche Energy ⁽²⁾	E_{AS}	76	mJ
Power Dissipation	P_D	40	W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	3.1	$^{\circ}\text{C/W}$
Junction Temperature	T_J	150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55~ +150	$^{\circ}\text{C}$

MOSFET ELECTRICAL CHARACTERISTICS($T_a=25^{\circ}\text{C}$ unless otherwise noted)

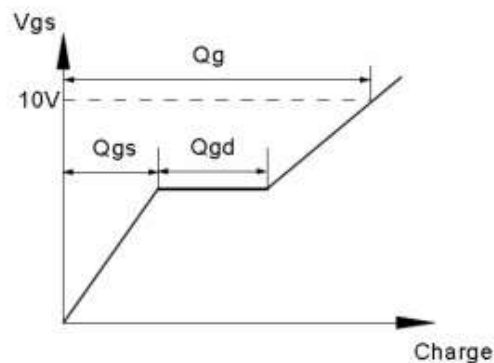
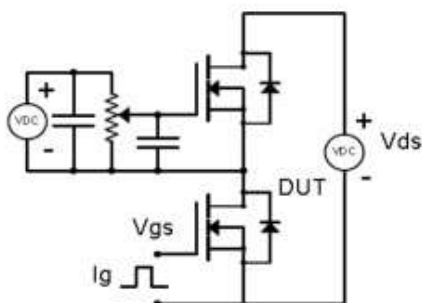
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D =250μA	40	-	-	V
Zero gate voltage drain current	I _{DSS}	V _{DS} =40V, V _{GS} = 0V	-	-	1	μA
Gate-body leakage current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V	-	-	±100	nA
Gate threshold voltage ⁽³⁾	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.2	1.7	2.2	V
Drain-source on-resistance ⁽³⁾	R _{DS(on)}	V _{GS} =10V, I _D =20A	-	2.8	3.5	mΩ
		V _{GS} =4.5V, I _D =15A	-	4.4	5.2	
Gate Resistance	R _g	V _{DS} =V _{GS} =0V, f =1MHz	-	8.4	-	Ω
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{DS} =20V, V _{GS} =0V, f =1MHz	-	1280	-	pF
Output Capacitance	C _{oss}		-	426	-	
Reverse Transfer Capacitance	C _{rss}		-	30	-	
Switching characteristics						
Turn-on delay time	t _{d(on)}	V _{DD} =20V, I _D =20A, V _{GS} =10V, R _G =6Ω	-	7	-	ns
Turn-on rise time	t _r		-	6.5	-	
Turn-off delay time	t _{d(off)}		-	29	-	
Turn-off fall time	t _f		-	13	-	
Total Gate Charge	Qg	VDS=20V, ID=20A, VGS=10V	-	20.3	-	nC
Gate-Source Charge	Qgs		-	3.9	-	
Gate-Drain Charge	Qgd		-	4.2	-	
Reverse Recovery Chrage	Qrr	I _F =15A, di/dt=100A/us		17		nC
Reverse Recovery Time	Trr	I _F =15A, di/dt=100A/us		30		ns
Source-Drain Diode characteristics						
Diode Forward voltage ⁽³⁾	V _{SD}	V _{GS} =0V, I _S =50A	-	-	1.2	V
Diode Forward current ⁽⁴⁾	I _S		-	-	70	A

Notes:

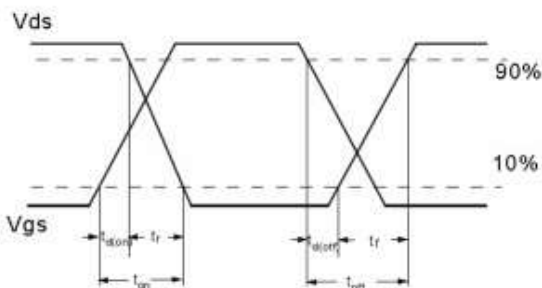
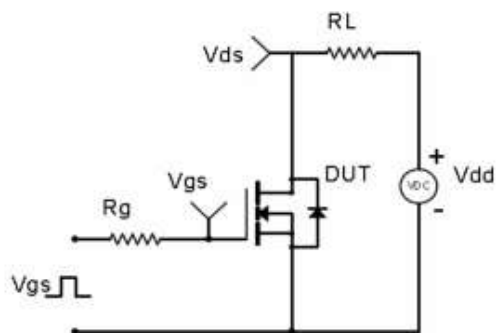
1. Repetitive Rating: pulse width limited by maximum junction temperature
2. EAS Condition: $T_J = 25^{\circ}\text{C}, V_{DD} = 20V, R_G = 50\Omega, L = 0.5mH, I_{AS} = 17.5A$
3. Pulse Test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
4. Surface Mounted on FR4 Board, $t \leq 10$ sec

Test Circuit & Waveform

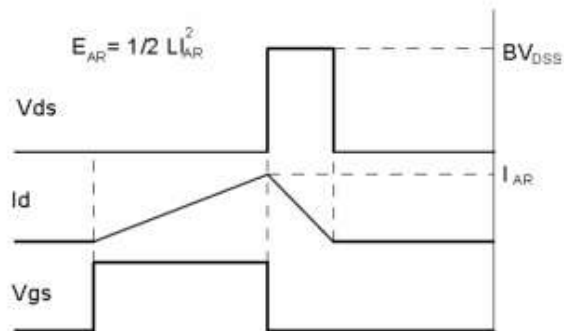
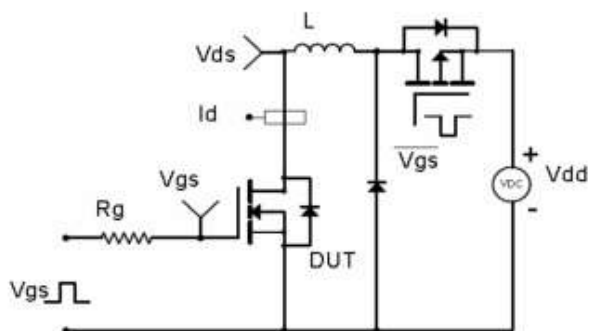
Gate Charge Test Circuit & Waveform



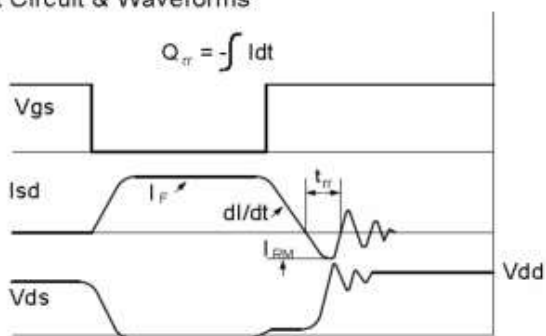
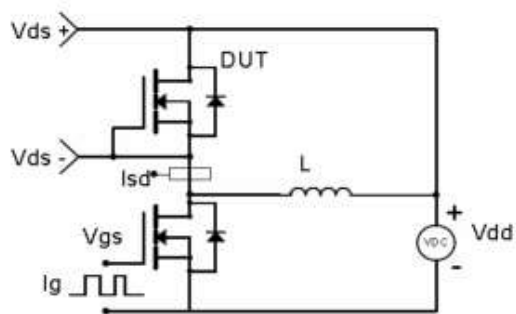
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Electrical Characteristics Diagrams

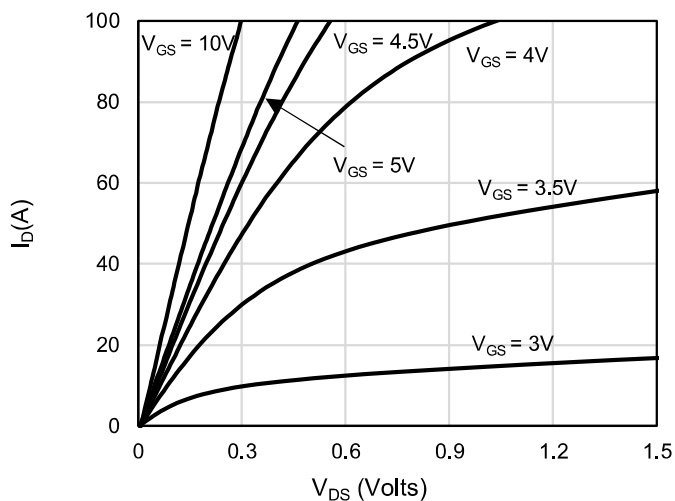


Figure 1: On-Region Characteristics

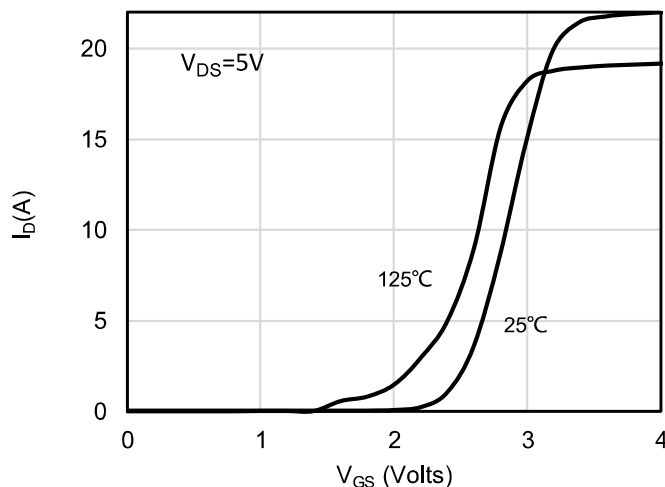


Figure 2: Transfer Characteristics

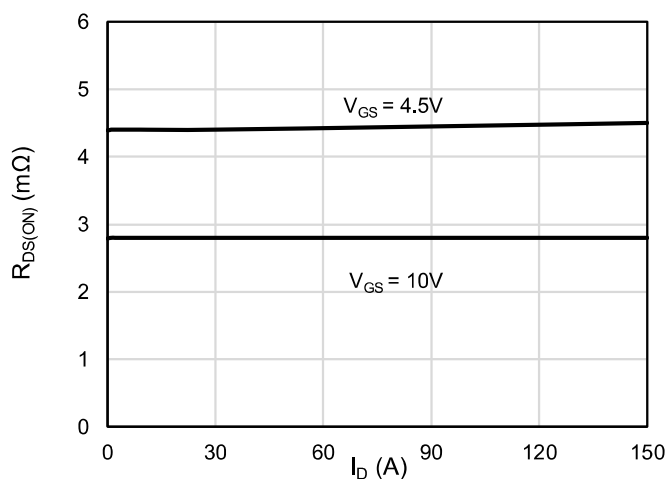


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

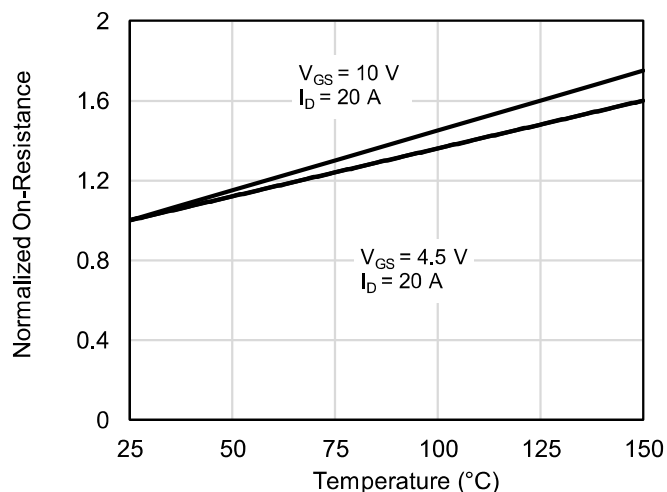


Figure 4: On-Resistance vs. Junction Temperature

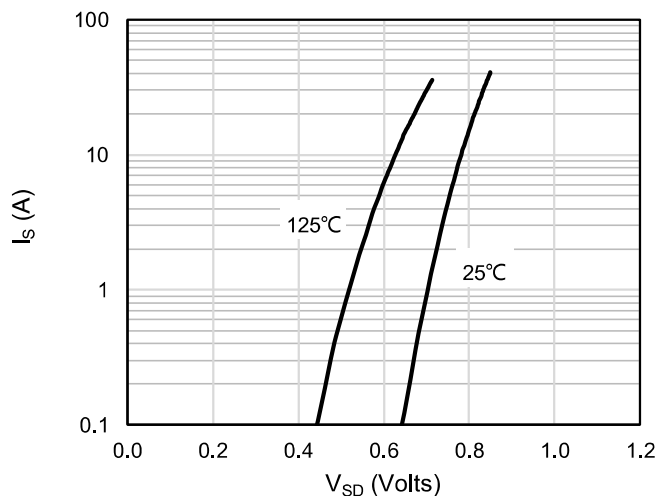


Figure 5: Body-Diode Characteristics

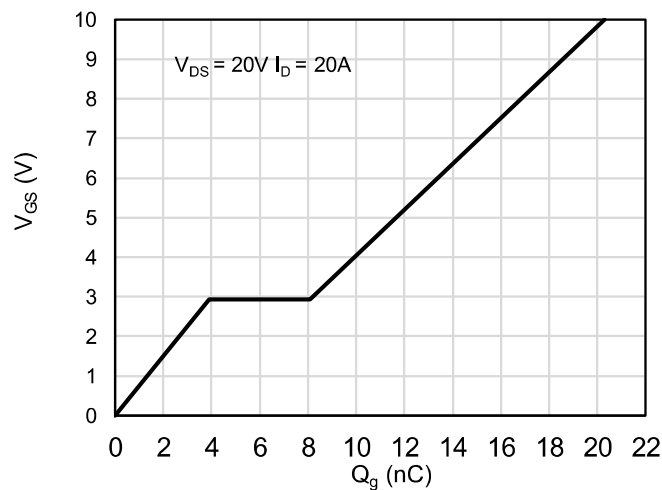


Figure 6: Gate-Charge Characteristics

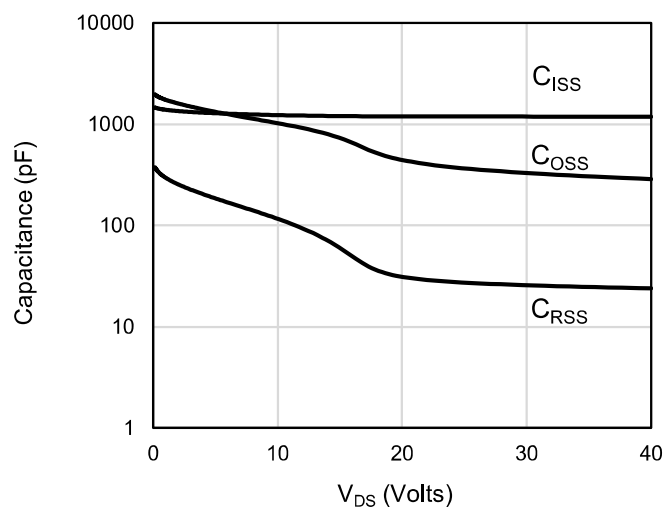


Figure 7: Capacitance Characteristics

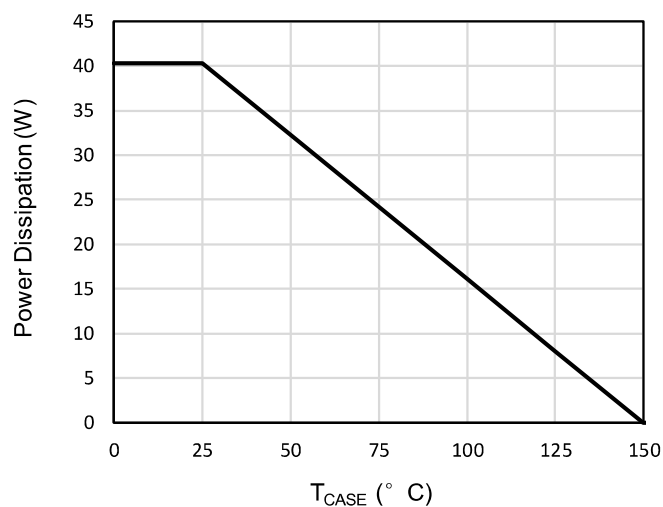


Figure 8: Power De-rating

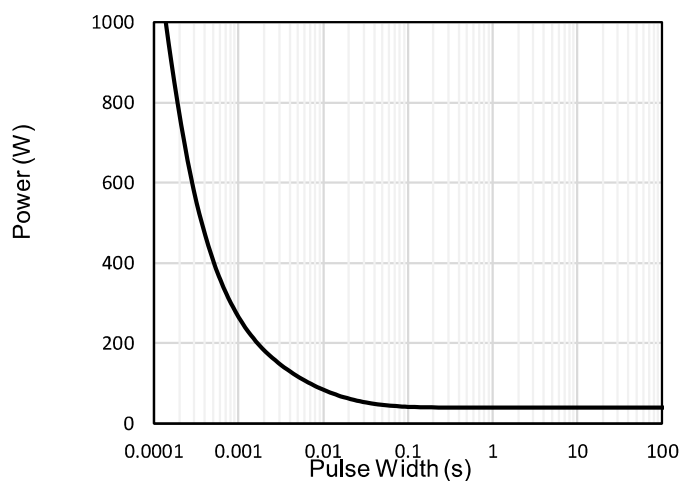


Figure 9: Single Pulse Power Rating Junction-to-Case

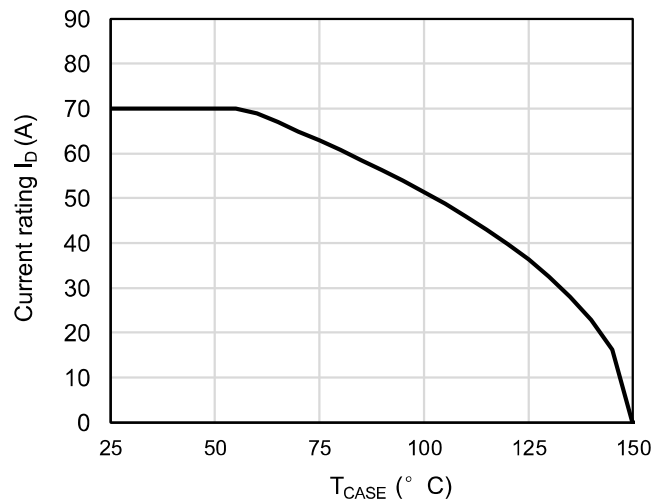


Figure 10: Current De-rating

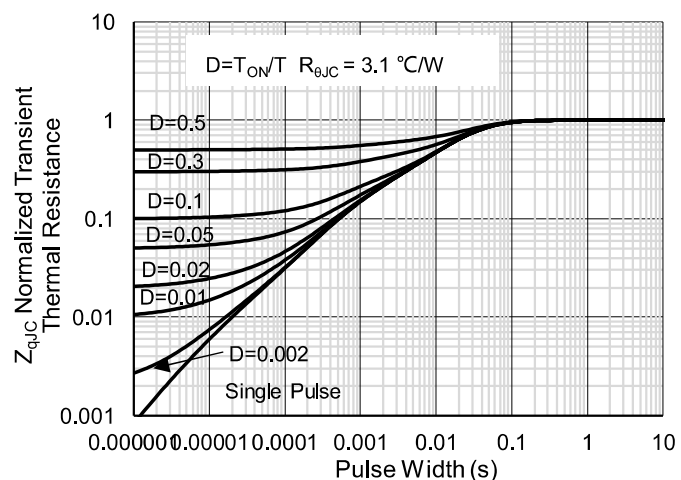


Figure 11: Normalized Maximum Transient Thermal Impedance

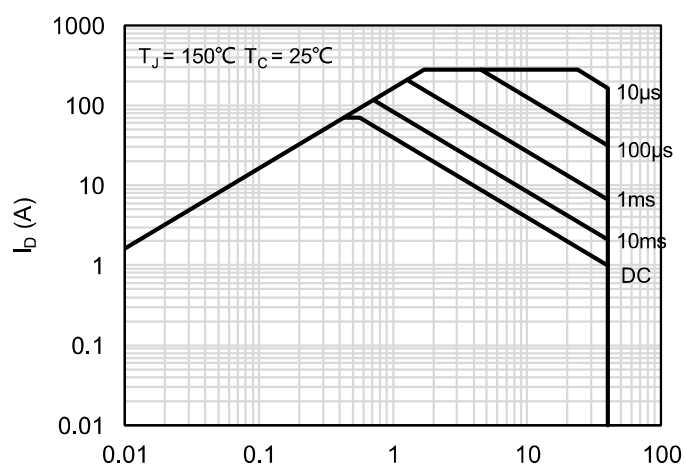
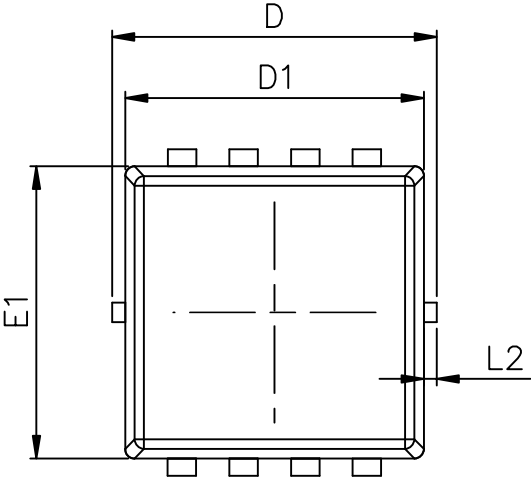
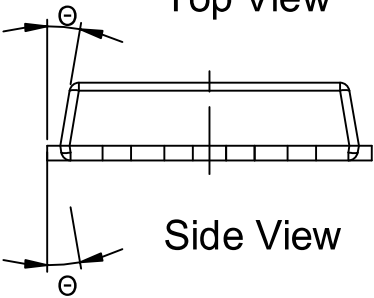


Figure 12: Maximum Forward Biased Safe Operating Area

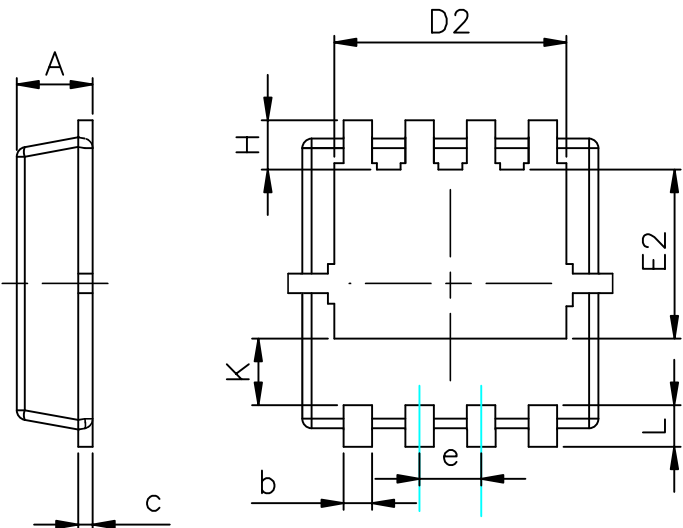
Package Outlines



Top View



Side View



Side View

Bottom View

SYMBOL	MIN	NOM	MAX
A	0.70	0.80	0.90
b	0.20	0.30	0.40
c	0.14	0.15	0.25
D	3.20	3.30	3.40
D1	3.00	3.15	3.30
D2	2.35	2.45	2.55
e	0.65 BSC		
E	3.25	3.35	3.45
E1	2.85	3.00	3.15
E2	1.635	1.735	1.835
H	0.41	0.56	0.71
K	0.585	0.685	0.785
L	0.30	0.40	0.50
L1	0.05	0.15	0.25
L2	—	—	0.15
Θ	8°	10°	12°

COMMON DIMENSIONS
(UNITS OF MEASURE = MILLIMETER)