

N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ☒ Surface-mounted package
- ☒ Advanced trench cell design

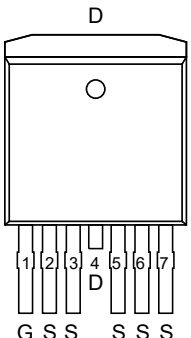
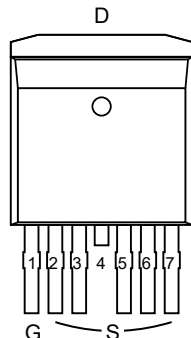
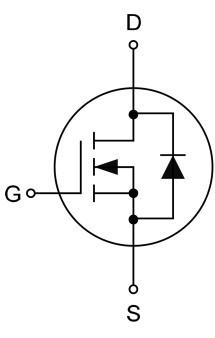
1.2 Applications

- ☒ LCD TV appliances
- ☒ High power inverter system
- ☒ LCDM appliances

1.3 Quick reference

- ☒ $BV \geq 100\text{ V}$
- ☒ $P_D \leq 340\text{ W}$
- ☒ $I_D \leq 280\text{ A}$
- ☒ $R_{DS(ON)} \leq 2.3\text{ m}\Omega @ V_{GS} = 10\text{ V}$

2. Pin Description

Simplified Outline ^[1]		Symbol
 TO-263-7L (H)	 TO-263-7L (Q)	 N-Channel

Note:

1. These two shapes are supplied by two packaging factories. The polarity of pin 4 is different.

3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	$T_C=25^{\circ}\text{C}$	100	-	V
V_{GS}	Gate-Source Voltage	$T_C=25^{\circ}\text{C}$	-	± 20	V
I_D	Drain Current (DC)	$T_C=25^{\circ}\text{C}, V_{GS}=10\text{ V}$	-	280	A
		$T_C=100^{\circ}\text{C}, V_{GS}=10\text{ V}$	-	190	A
I_{DM}^*	Drain Current (Pulsed)	$T_C=25^{\circ}\text{C}, V_{GS}=10\text{ V}$	-	1000	A
P_D	Drain Power Dissipation	$T_C=25^{\circ}\text{C}$	-	340	W
I_S	Continuous-Source Current	$T_C=25^{\circ}\text{C}$	-	280	A
E_{AS}	Single Pulsed Avalanche Energy	$V_{DD}=40\text{ V}, L=0.5\text{ mH}$	-	826	mJ
T_J, T_{stg}	Operating Junction and Storage Temperature Range		-55	175	$^{\circ}\text{C}$
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		-	40	$^{\circ}\text{C/W}$
$R_{\theta JC}$	Thermal Resistance-Junction to Case		-	0.44	$^{\circ}\text{C/W}$

Notes:

- * Pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.
- ** Surface mounted on minimum footprint pad area.
- *** Limited by bonding wire.

4. Marking Information

Product Name	Marking ^[1]
KJ023N10D7	KJ023N10D7 HYWWXX XXXXXX-X or KJ023N10D7 QYWWXX XXXXXX-X Note: 1. "H" and "Q" in the mark correspond to two different packing factories.

5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity
KJ023N10D7	TO263-7L	13"	24 mm	800

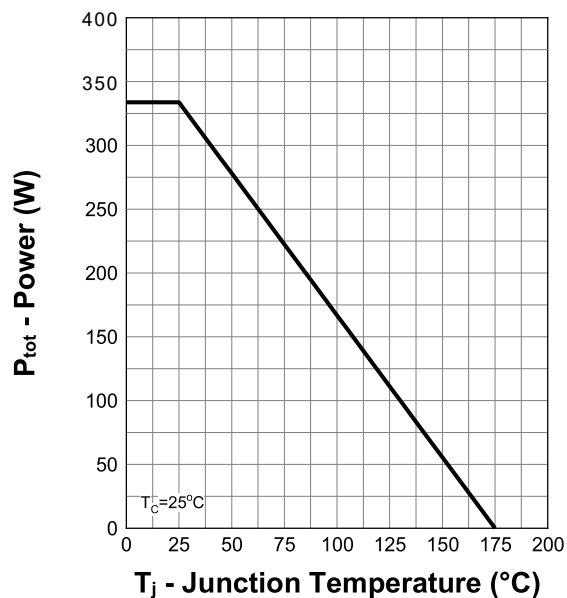
Note: KUAJIEXIN defines "Green" as lead-free (RoHS compliant) and halogen free (Br or Cl does not exceed 900 ppm by weight in homogeneous material and total of Br and Cl does not exceed 1500 ppm by weight; Follow IEC 61249-2-21 and IPC/JEDEC J-STD-020C)

6. Electrical Characteristics (T_A=25°C unless otherwise noted)

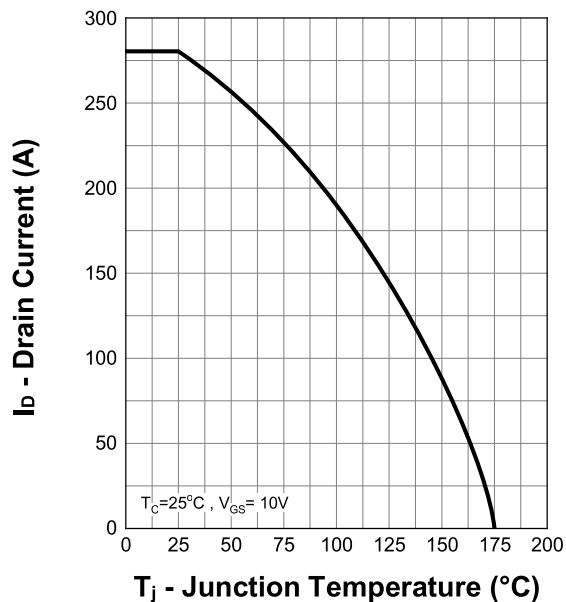
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0 V, I _{DS} =250 μA	100	-	-	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =25 0μA	2	-	4	V
I _{DSS}	Zero Gate Voltage Source Current	V _{DS} =80 V, V _{GS} =0 V	-	-	1	μA
I _{GSS}	Gate Leakage Current	V _{GS} =±20 V, V _{DS} =0 V	-	-	±100	nA
R _{DS(ON)}	On-State Resistance	V _{GS} =10 V, I _{DS} =20 A	-	2.0	2.3	mΩ
Diode Characteristics						
V _{SD}	Diode Forward Voltage	I _{SD} =20 A, V _{GS} =0 V	-	-	1.3	V
t _{rr}	Reverse Recovery Time	I _{SD} =20 A, V _{GS} =0 V, dI _{SD} /dt=100 A/μs	-	96	-	ns
Q _{rr}	Reverse Recovery Charge		-	225	-	nC
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{GS} =0 V, V _{DS} =50 V, Frequency=1 MHz	-	7884	-	pF
C _{oss}	Output Capacitance		-	1240	-	
C _{rss}	Reverse Transfer Capacitance		-	30	-	
t _{d(on)}	Turn-on Delay Time	V _{DS} =50 V, V _{GEN} =10 V, R _G =4.5 Ω, R _L =2.5 Ω, I _{DS} =20 A	-	26	-	ns
t _r	Turn-on Rise Time		-	55	-	
t _{d(off)}	Turn-off Delay Time		-	72	-	
t _f	Turn-off Fall Time		-	66	-	
Gate Charge Characteristics						
Q _g	Total Gate Charge	V _{DS} =50 V, V _{GS} =10 V, I _{DS} =20 A	-	122	-	nC
Q _{gs}	Gate-Source Charge		-	32	-	
Q _{gd}	Gate-Drain Charge		-	31	-	

7. Typical Characteristics

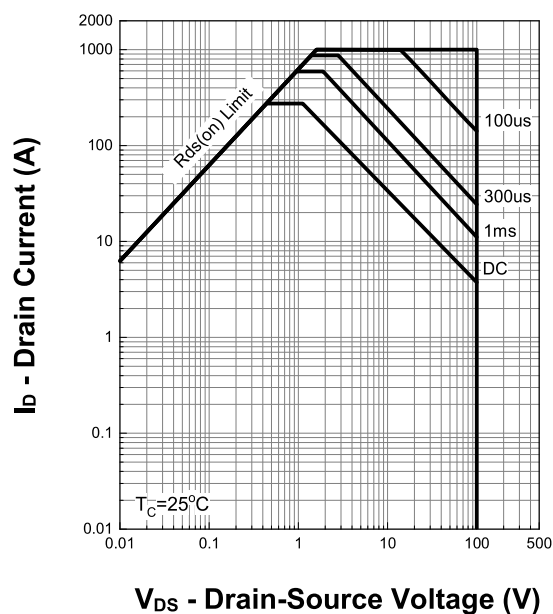
Power Capability



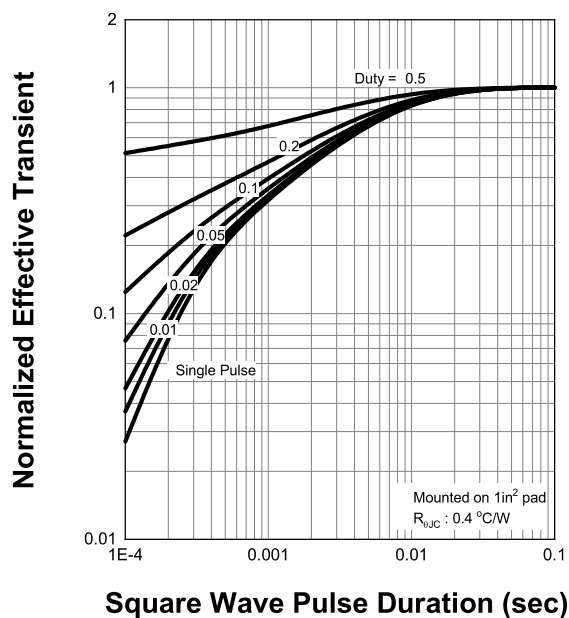
Current Capability



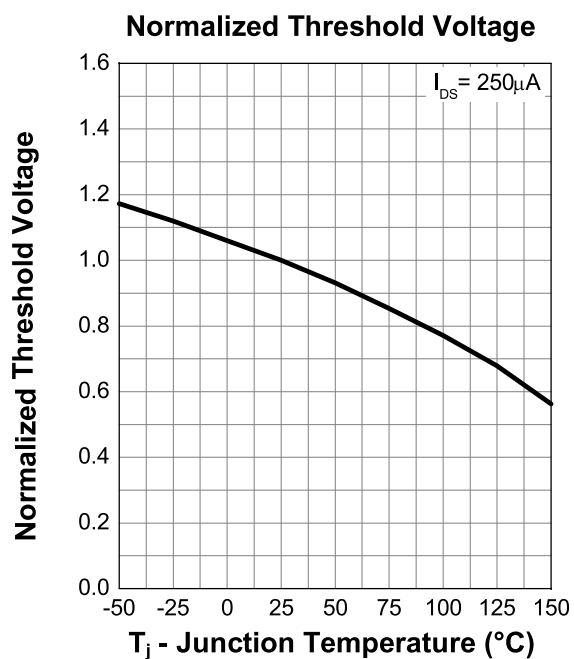
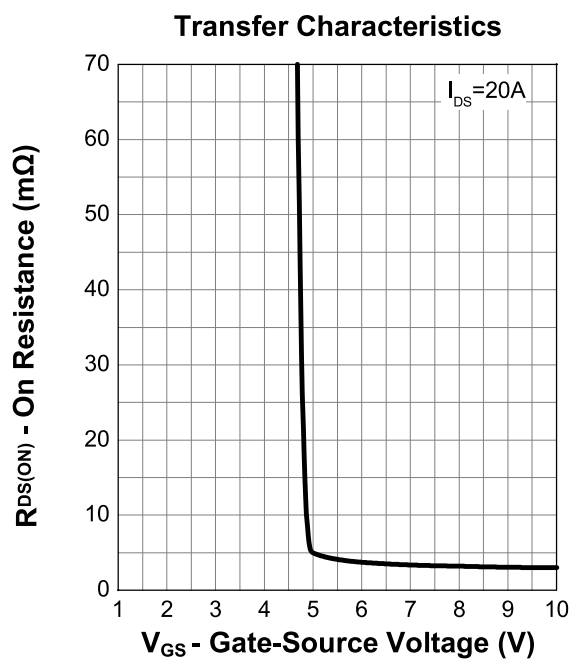
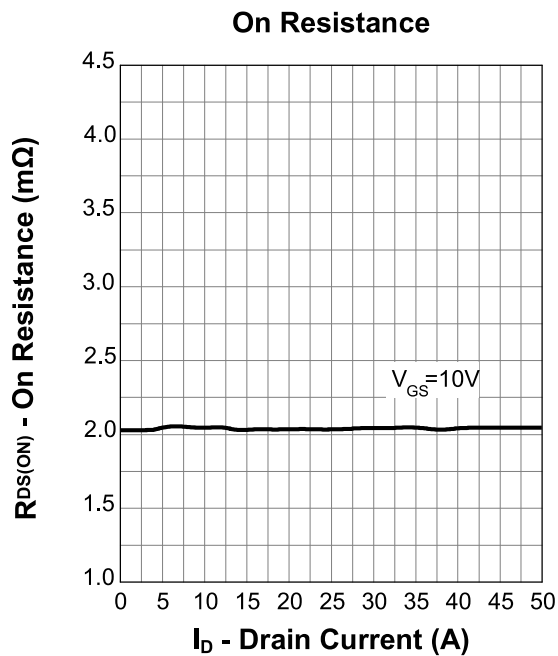
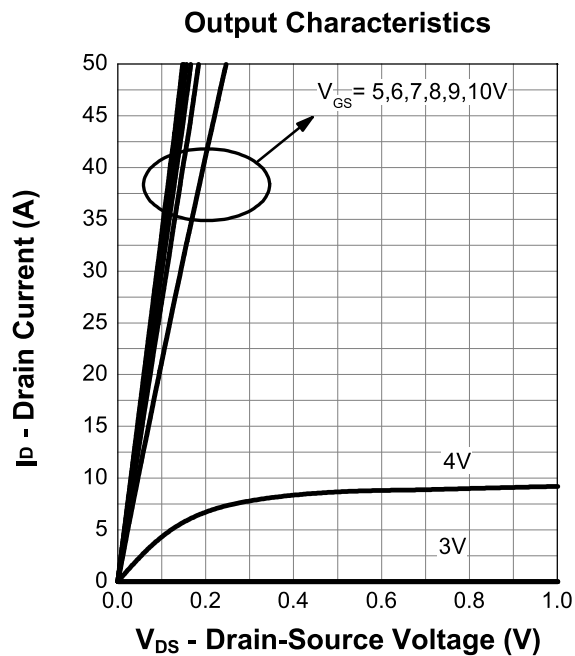
Safe Operating Area



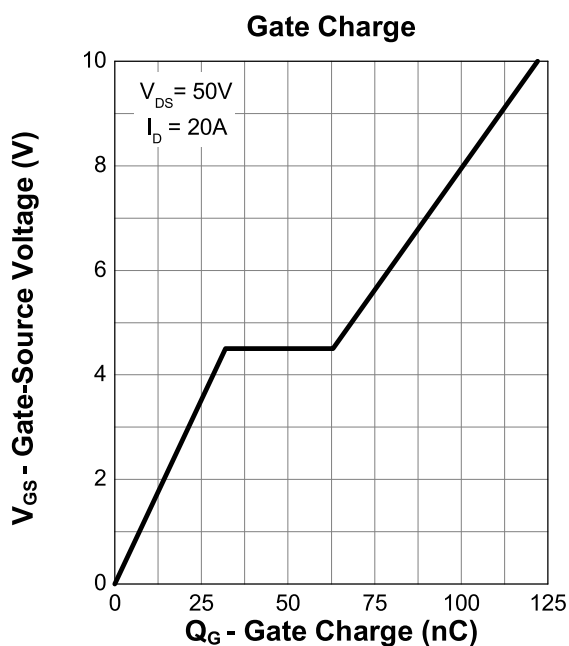
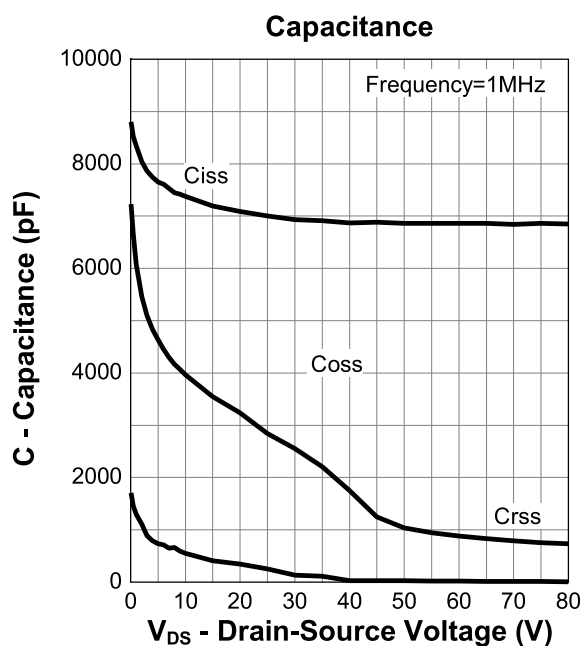
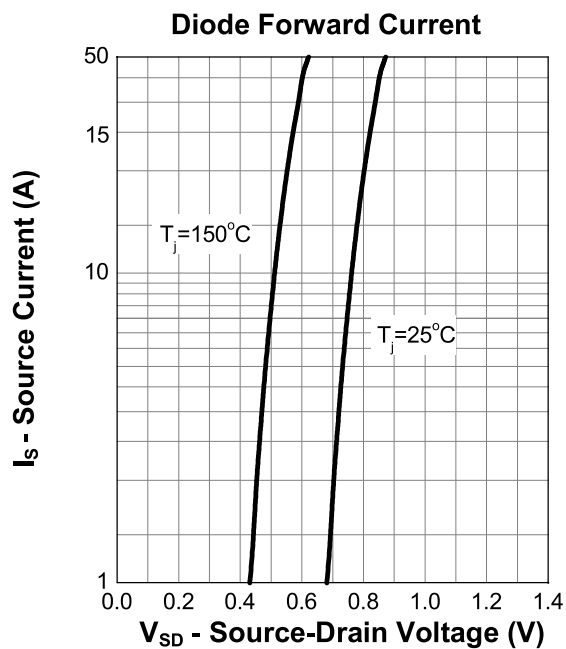
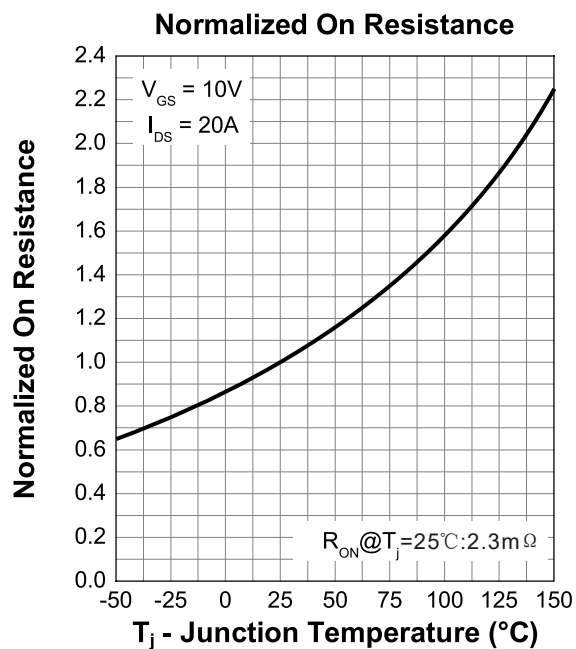
Transient Thermal Impedance



7. Typical Characteristics (cont.)

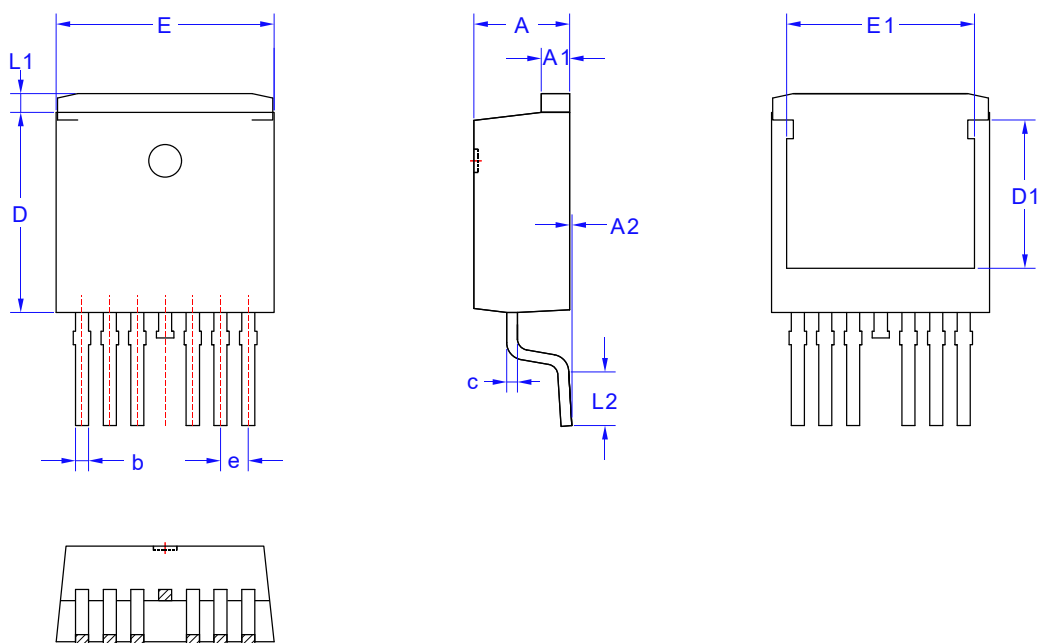


7. Typical Characteristics (cont.)



8. Package Dimensions

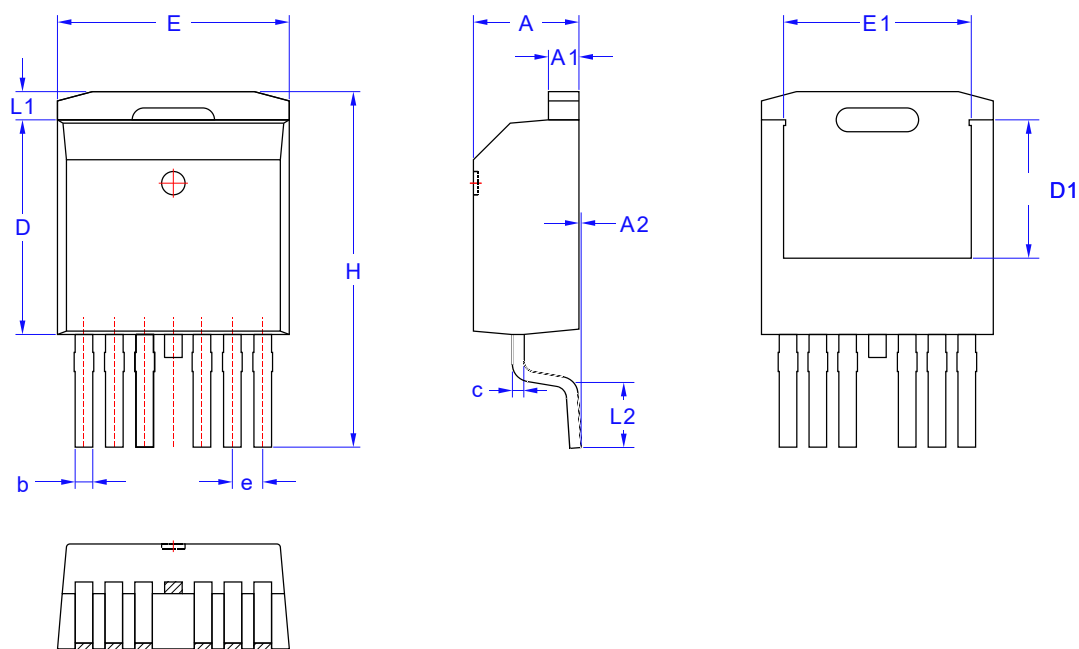
TO-263-7L (H) Package



Symbol	Dimensions in Millimeters		
	MIN.	NOM.	MAX.
A	4.20	4.40	4.60
A1	1.25	1.30	1.35
A2	0.00	0.075	0.15
b	0.50	0.60	0.70
c	0.45	0.50	0.55
D	9.05	9.25	9.45
D1	6.65	6.85	7.05
E	9.80	10.00	10.2
E1	8.50	8.60	8.70
e		1.27 BSC	
H	14.90	15.10	15.40
L1	0.65	0.85	1.05
L2	2.30	2.50	2.70

8. Package Dimensions (cont.)

TO-263-7L (Q) Package



Symbol	Dimensions in Millimeters		
	MIN.	NOM.	MAX.
A	4.30	4.43	4.56
A1	1.20	1.30	1.40
A2	0.00	0.075	0.15
b	0.50	0.61	0.72
c	0.45	0.51	0.62
D	8.90	9.08	9.28
D1	6.25	6.45	6.75
E	10.08	10.18	10.28
E1	8.20	8.30	8.40
e		1.27 BSC	
H	15.00	15.50	16.00
L1	0.85	1.00	1.15
L2	2.20	2.50	2.80