

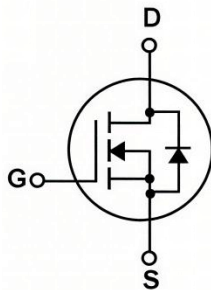
Descriptions

This is 100V 180A N-Channel Power MOSFET.

Features

- Advanced Trench Technology.
- Excellent Switching Characteristics.
- Extended Safe Operating Area.
- Unrivalled Gate Charge :Qg= 169 nC(Typ.).
- BVDSS=100 V, ID=180 A
- RDS(on) : 2.2m Ω (Typ)@VG=10V
- 100% Avalanche Tested

Equivalent Circuit & Pinning



1.Gate(G) 2.Drain(D) 3.Source (S)



TO-263

Absolute Maximum Ratings(Ta=25°C)

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	100	V
Continuous drain current $T_C = 25^\circ\text{C}$ (Silicon limit) $T_C = 25^\circ\text{C}$ (Package limit) $T_C = 100^\circ\text{C}$ (Silicon limit)	I_D	218 180 138	A
Pulsed drain current ($T_C = 25^\circ\text{C}$, t_p limited by T_{jmax})	$I_{D \text{ pulse}}$	720	A
Avalanche energy, single pulse ($I_D = 46\text{A}$, $R_g=25\Omega$)	E_{AS}	529	mJ
Gate-Source voltage	V_{GS}	± 20	V
Power dissipation ($T_C = 25^\circ\text{C}$)	P_{tot}	250	W
Operating junction and storage temperature	T_j, T_{stg}	-55...+150	$^\circ\text{C}$
Soldering temperature, wave soldering only allowed at leads (1.6mm from case for 10s)	T_{sold}	260	$^\circ\text{C}$

Thermal Characteristic

Symbol	Parameter	Max.	Units
$R_{\theta JC}$	Junction-to-Case	0.5	$^{\circ}\text{C}/\text{W}$
$R_{\theta JA}$	Junction-to-Ambition	62	$^{\circ}\text{C}/\text{W}$

Electrical Characteristics($T_a=25^{\circ}\text{C}$)

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Static Characteristic						
Drain-source breakdown voltage	BV _{DSS}	100	-	-	V	V _{GS} =0V, I _D =250uA
Gate threshold voltage	V _{GS(th)}	2.2	3	3.8	V	V _{DS} =V _{GS} , I _D =250uA
Zero gate voltage drain current	I _{DSS}	- -	0.05 -	1 100	μA	V _{DS} =100V, V _{GS} =0V T _J =25°C T _J =125°C
Gate-source leakage current	I _{GSS}	-	±10	±100	nA	V _{GS} =±20V, V _{DS} =0V
Drain-source on-state resistance	R _{DS(on)}	- -	2.2	3.0	mΩ	V _{GS} =10V, I _D =90A
Transconductance	g _{fs}	-	197.2	-	S	V _{DS} =5V, I _D =90A

Electrical Characteristics(Ta=25°C)

Dynamic Characteristic						
Input Capacitance	C_{iss}	8290	-	18978	pF	$V_{GS}=0V, V_{DS}=40V,$ $f=1MHz$
Output Capacitance	C_{oss}	1446	-	3420		
Reverse Transfer Capacitance	C_{rss}	792	-	4090		
Input Capacitance	C_{iss}	-	11355	17035.5	pF	$V_{GS}=0V, V_{DS}=50V,$ $f=1MHz$
Output Capacitance	C_{oss}	-	1446	2169		
Reverse Transfer Capacitance	C_{rss}	-	54	108		
Gate Total Charge	Q_G	-	169	253.5	nC	$V_{GS}=10V, V_{DS}=50V,$ $I_D=90A, f=1MHz$
Gate-Source charge	Q_{gs}	-	67	-		
Gate-Drain charge	Q_{gd}	-	30	60		
Turn-on delay time	$t_{d(on)}$	-	35	-	ns	$V_{GS}=10V, V_{DD}=50V,$ $R_{G_ext}=3.0\Omega$
Rise time	t_r	-	111	-		
Turn-off delay time	$t_{d(off)}$	-	84	-		
Fall time	t_f	-	112	-		
Gate resistance	R_G	-	2.3	3.5	Ω	$V_{GS}=0V, V_{DS}=0V,$ $f=1MHz$
Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Body Diode Forward Voltage	V_{SD}	-	0.9	1.4	V	$V_{GS}=0V, I_{SD}=90A$
Body Diode Continuous Forward Current	I_S	-	-	180	A	$T_C = 25^\circ C$
Body Diode Pulsed Current	$I_{S \text{ pulse}}$	-	-	720	A	$T_C = 25^\circ C$
Body Diode Reverse Recovery Time	t_{rr}	-	101	202	ns	$I_F=90A,$ $dI/dt=100A/\mu s$
Body Diode Reverse Recovery Charge	Q_{rr}	-	338	676	nC	

Typical Performance Characteristics

Fig 1: Output Characteristics

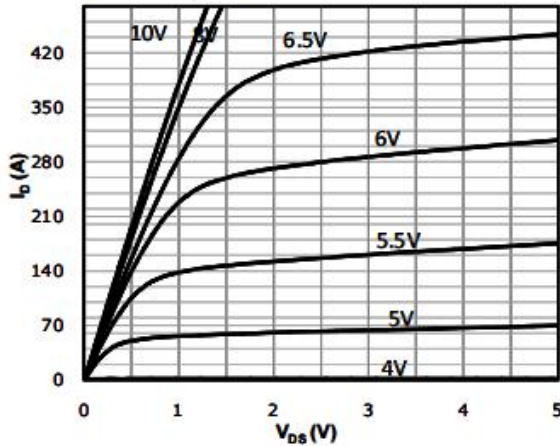
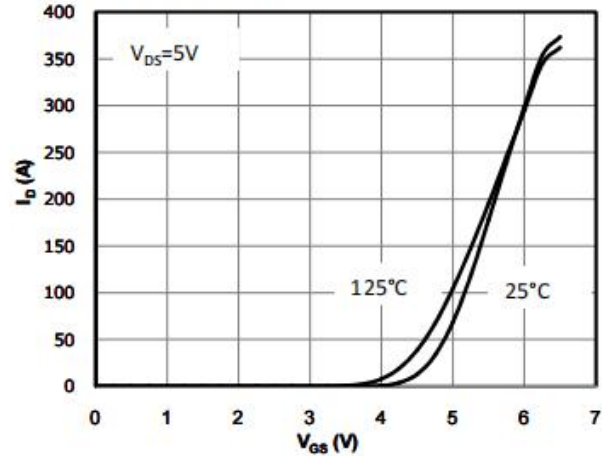


Fig 2: Transfer Characteristics



3: $R_{DS(on)}$ vs Drain Current and Gate Voltage

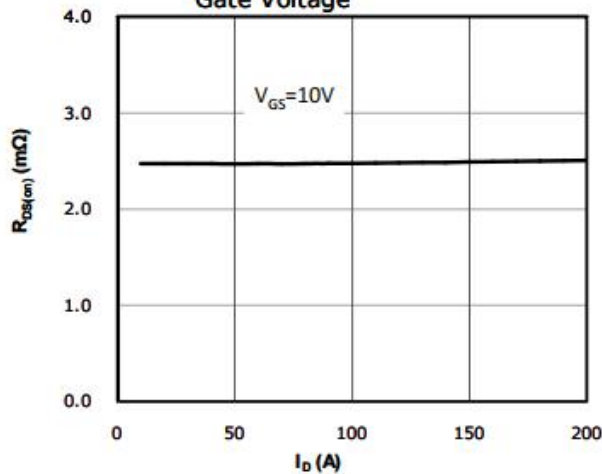


Fig 4: $R_{DS(on)}$ vs Gate Voltage

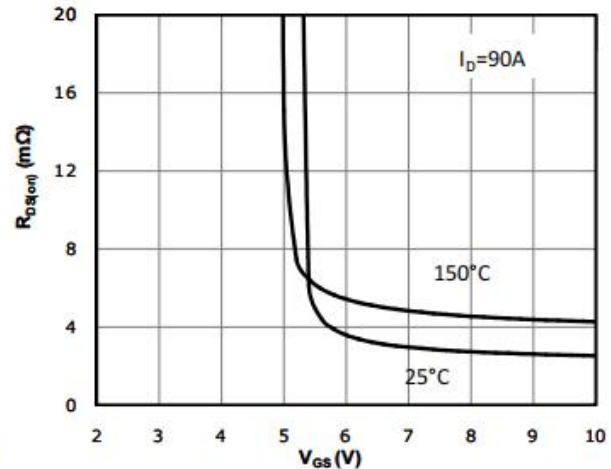


Fig 5: $R_{DS(on)}$ vs. Temperature

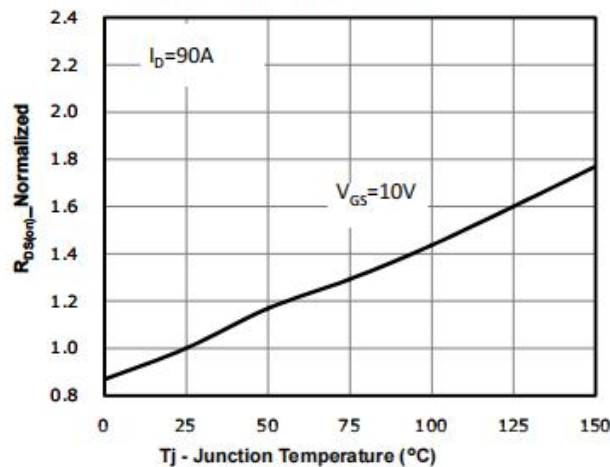
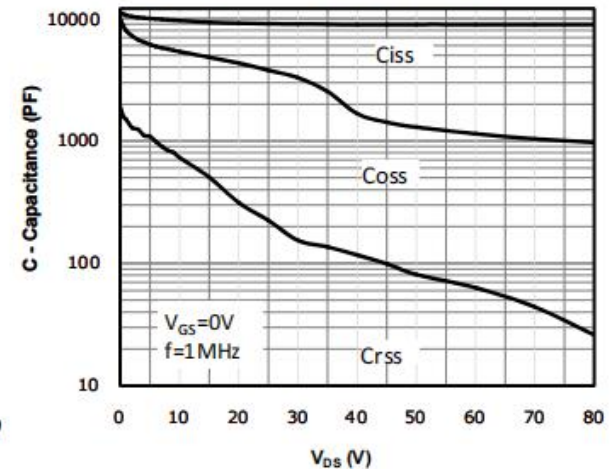


Fig 6: Capacitance Characteristics



Typical Performance Characteristics

Fig 7: Gate Charge Characteristics

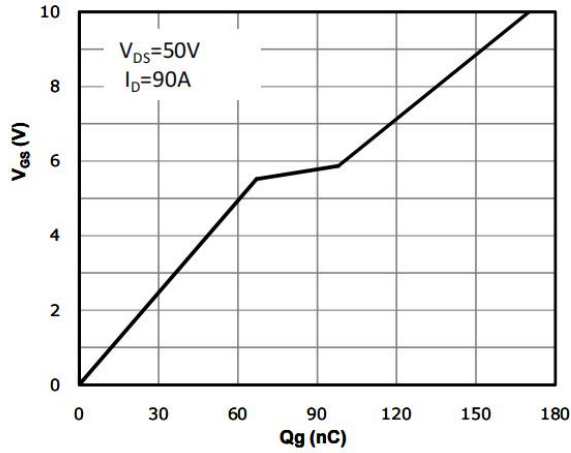


Fig 8: Body-diode Forward Characteristics

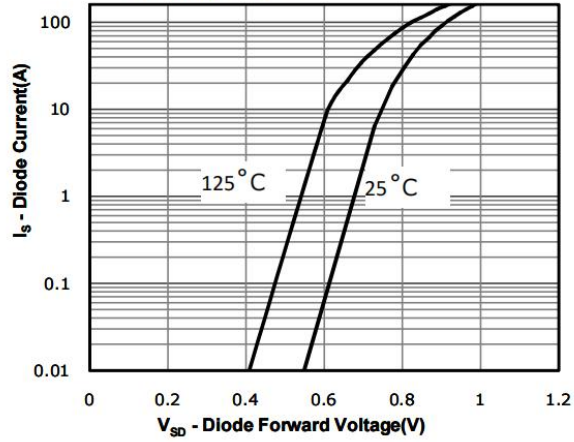


Fig 9: Power Dissipation

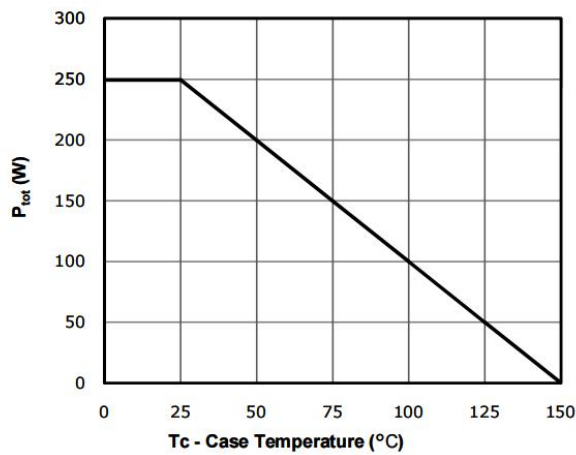


Fig 10: Drain Current Derating

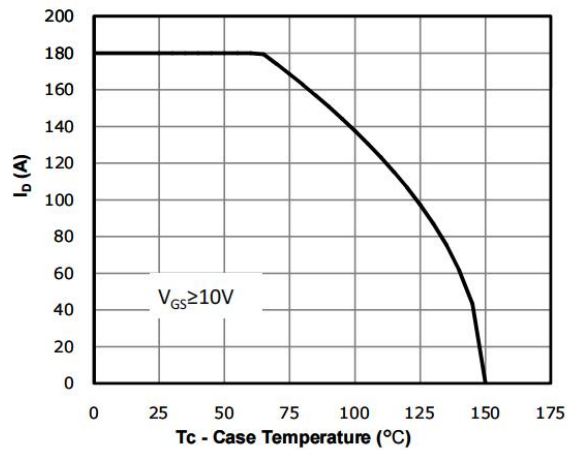
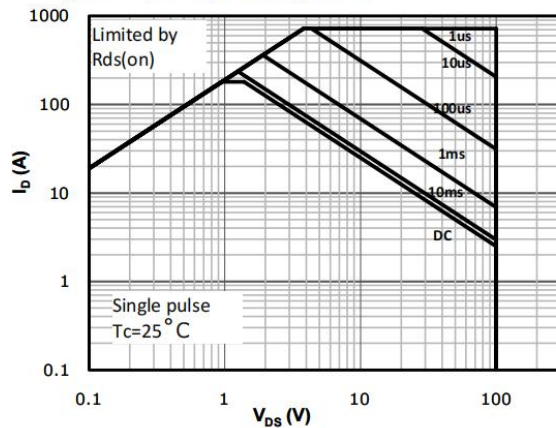
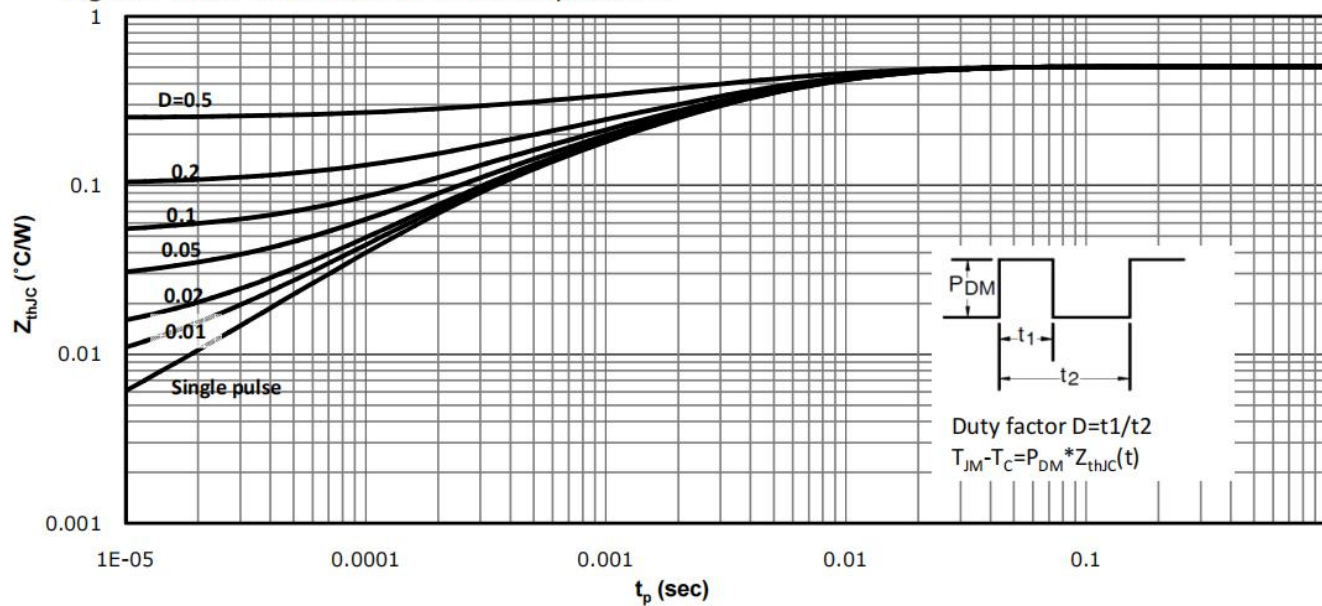


Fig 11: Safe Operating Area



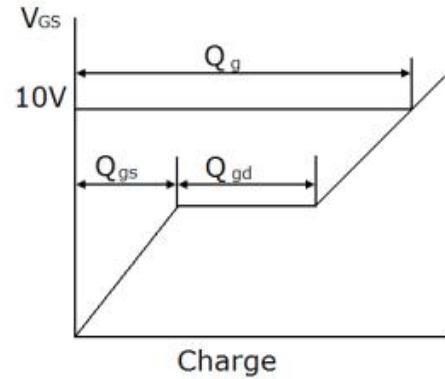
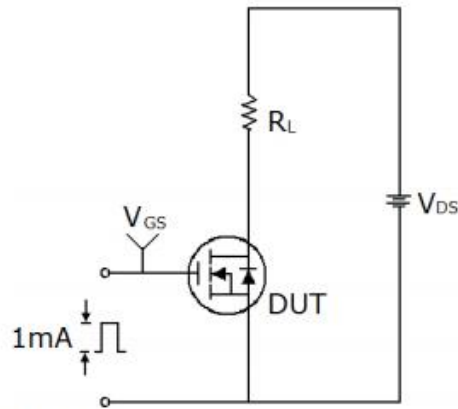
Typical Performance Characteristics

Fig 12: Max. Transient Thermal Impedance

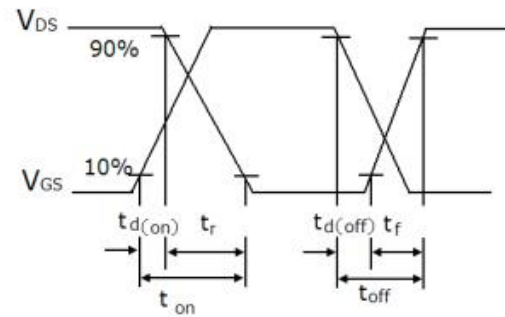
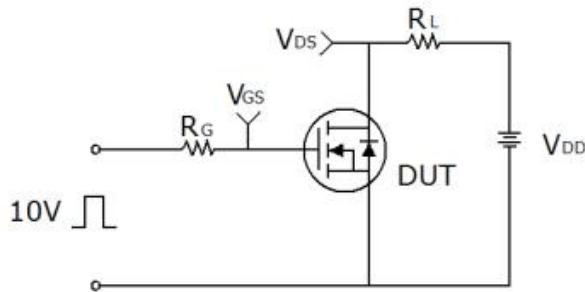


Test Circuit

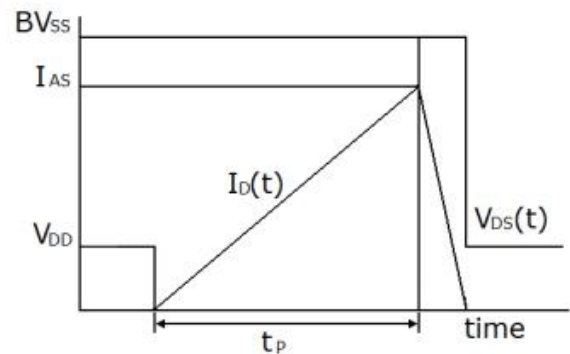
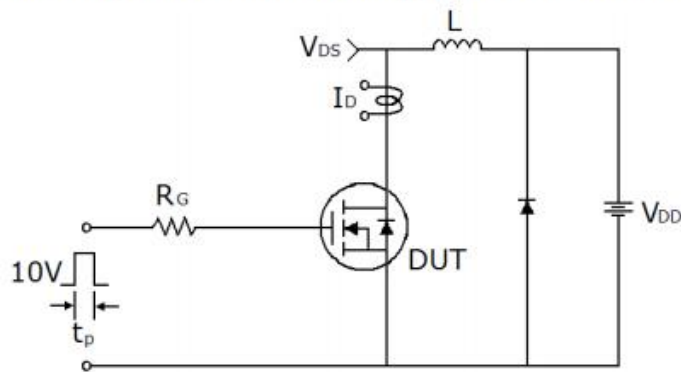
1) Gate charge test circuit & Waveform



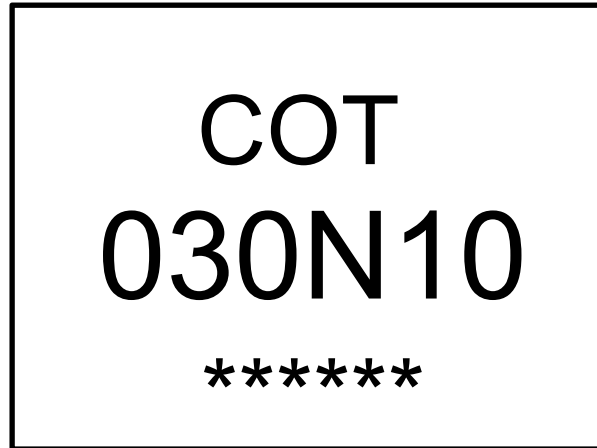
2) Switch Time Test Circuit:



3) Unclamped Inductive Switching Test Circuit & Waveforms



Marking Instructions



Note:

COT:

030N10:

*****:

Company Code

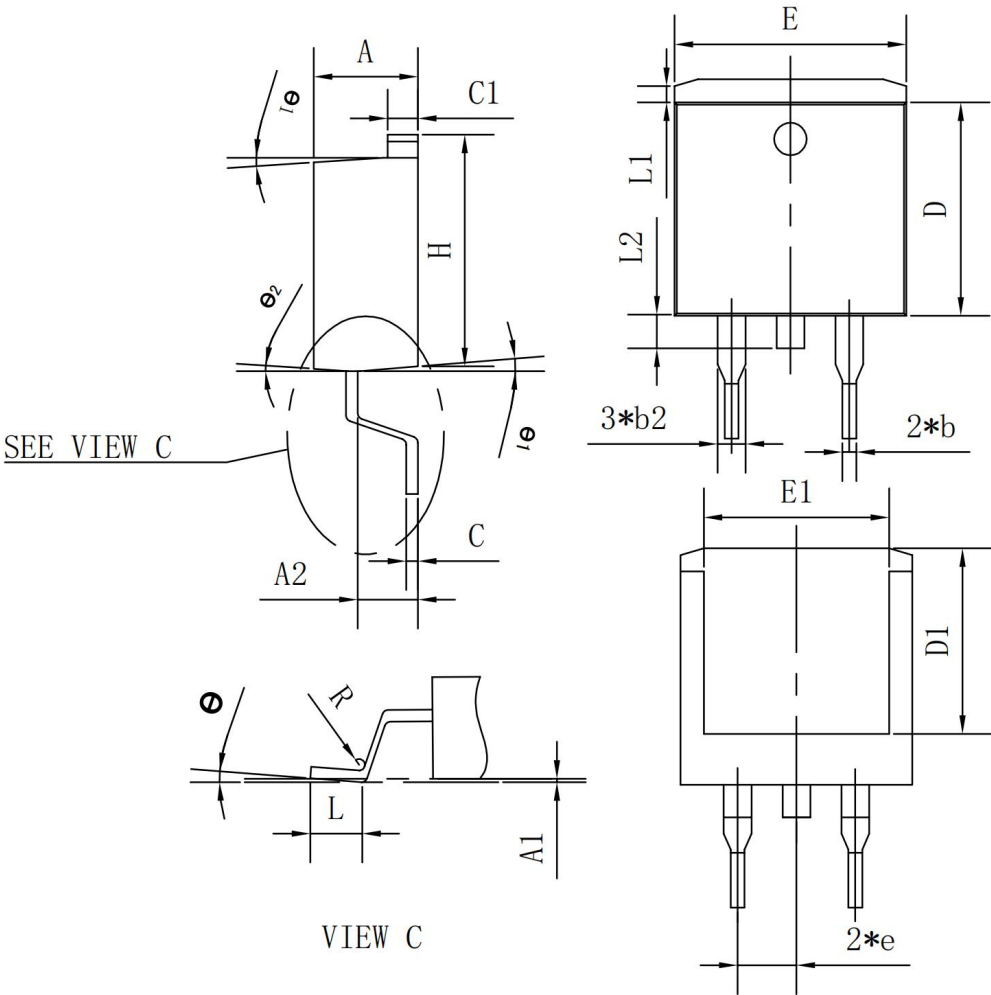
Product Code

*: Inner Code * : Year Code **: Week Code **: Lot Code.

Package Outline Dimensions

TO-263

Unit: mm



SYMBOL	MIN	NOM	MAX
A	4.35	4.47	4.60
A1	0.09	0.10	0.11
A2	2.30	2.40	2.50
b	0.70	0.80	1.00
b2	1.25	1.36	1.38
C	0.45	0.50	0.55
C1	1.29	1.30	1.31
D	9.10	9.20	9.30
D1	7.90	8.00	8.10
E	9.85	10.00	10.20
E1	7.90	8.00	8.10
H	15.30	15.50	15.70
e	-	2.54	-
L	2.34	2.54	2.74
L1	1.00	1.10	1.20
L2	1.30	1.40	1.50
R	0.24	0.25	0.26
θ	0°	4°	8°
θ1	4°	7°	10°
θ2	0°	3°	6°