

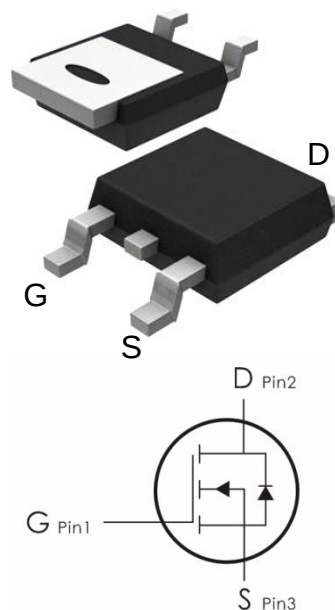
Description:

This N-Channel MOSFET uses advanced Planar technology and design to provide excellent $R_{DS(on)}$ with low gate charge.

It can be used in a wide variety of applications.

Features:

- 1) $V_{DS}=200V, I_D=18A, R_{DS(on)} < 140m\Omega @ V_{GS}=10V$ (Typ: $110m\Omega$)
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra low $R_{DS(on)}$.
- 5) Excellent package for good heat dissipation.



Package Marking and Ordering Information:

Part NO.	Marking	Package	Packing
FQD16N25CTM-DO	FQD 16N25C	TO- 252	2500 pcs/Reel

Absolute Maximum Ratings: ($T_C=25^{\circ}C$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	200	V
V_{GS}	Gate-Source Voltage	± 30	V
I_D	Continuous Drain Current	18	A
I_{DM}	Pulsed Drain Current ¹	68	
P_D	Power Dissipation	85	W
E_{AS}	Single pulse avalanche energy ²	220	mJ
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55-+150	$^{\circ}C$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	1.47	$^{\circ}C/W$

Electrical Characteristics: ($T_C=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Sourctce Breakdown Voltage	V _{GS} =0V,I _D =250 μ A	200	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =180V	---	---	1	μ A
I _{GSS}	Gate-Source Leakage Current	V _{GS} =± 20V, V _{DS} =0A	---	---	± 100	nA
On Characteristics						
V _{GS(th)}	Gate-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =250 μ A	2	---	4	V
R _{DS(ON)}	Drain-Source On Resistance ³	V _{GS} =10V,I _D =9A	---	110	140	m Ω
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1MHz	---	1173	---	pF
C _{oss}	Output Capacitance		---	140	--	
C _{rss}	Reverse Transfer Capacitance		---	67	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DS} =100V, R _{ENG} =10 Ω ,V _{GS} =10V	---	15.3	---	ns
t _r	Rise Time		---	0.7	---	ns
t _{d(off)}	Turn-Off Delay Time		---	33.5	---	ns
t _f	Fall Time		---	20.5	---	ns
Q _g	Gate-Drain “Miller” Charge	V _{GS} =10V, V _{DS} =160V, I _D =18A	---	41.1	---	nc
Q _{gs}	Total Gate Charge		---	7.3	---	nc
Q _{gd}	Gate-Source Charge		---	19	---	nc
Drain-Source Diode Characteristics						
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _{SD} =9A	---	---	1.5	V
I _S	Continuous Drain Curren	V _D =V _G =0V	---	---	18	A
I _{SM}	Pulsed Drain Current		---	---	68	A
Trr	Reverse Recovery Time	I _F =30A,T _J =25 °C	---	115	---	ns
Qrr	Reverse Recovery Charge	di/dt=100A/us	---	418	---	nc

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition : $T_J=25^{\circ}\text{C}$, $V_{DD}=100\text{V}$, $V_G=10\text{V}$, $L=0.5\text{mH}$
3. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 0.5\%$

Typical Characteristics: ($T_c=25^{\circ}\text{C}$ unless otherwise noted)

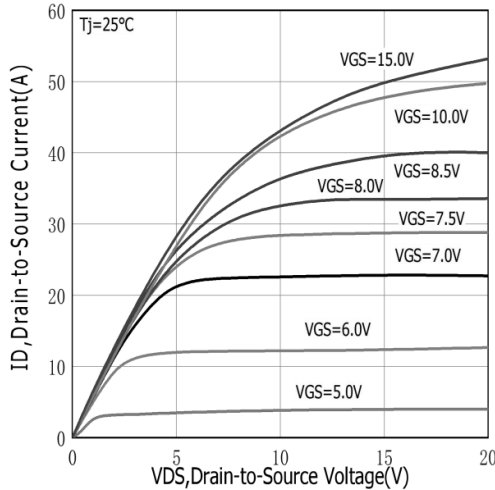


Figure.1 Typical Output Characteristics

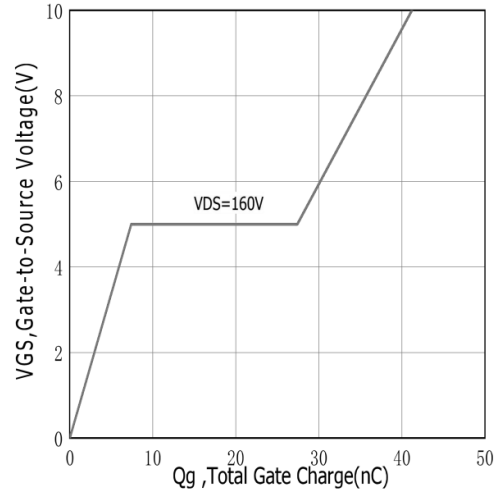


Figure.2 Typical Gate Charge vs Gate to Source Voltage

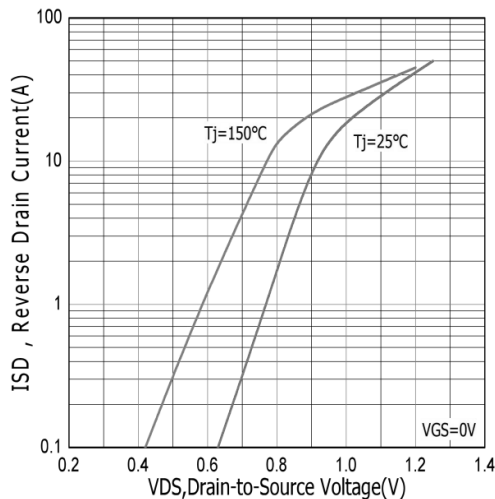


Figure.3 Typical Body Diode Transfer Characteristics

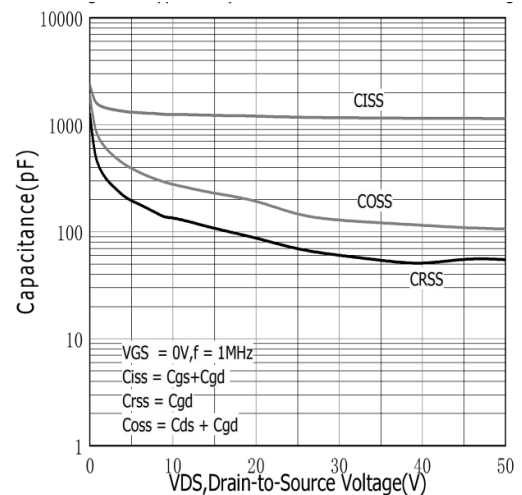


Figure.4 Typical Capacitance vs Drain to Source Voltage

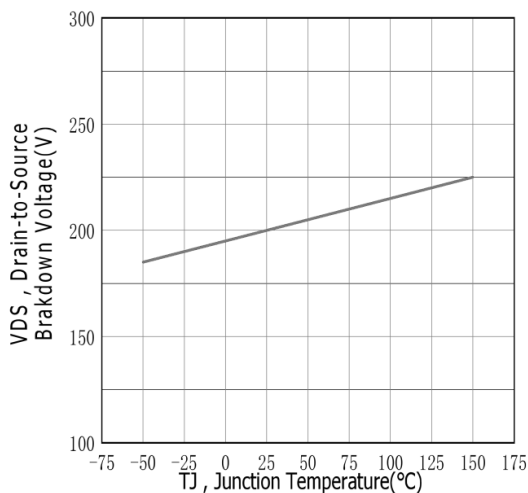


Figure.5 Typical Breakdown Voltage vs Junction Temperature

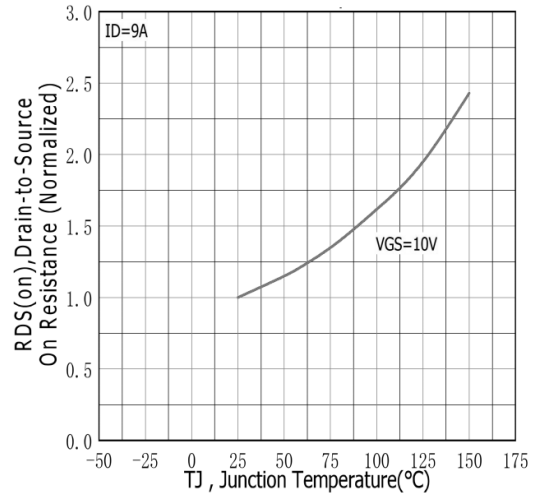


Figure.6 Typical Drain to Source on Resistance vs Junction Temperature

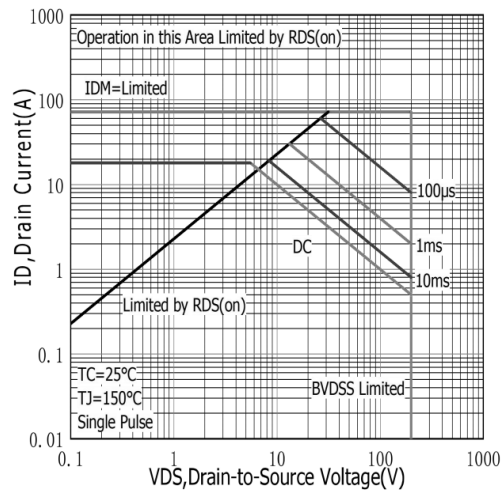


Figure.7 Maximum Forward Bias Safe Operating Area

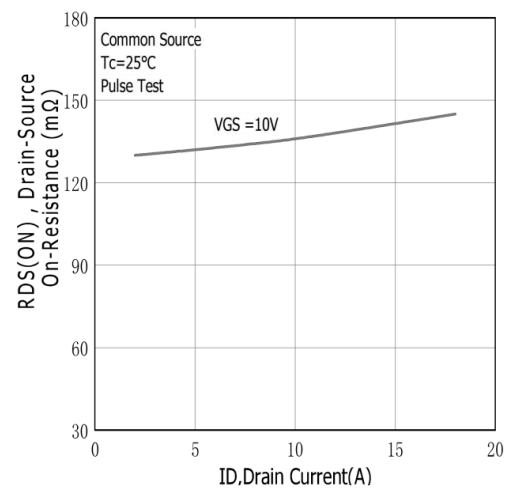


Figure.8 Typical Drain to Source ON Resistance vs Drain Current

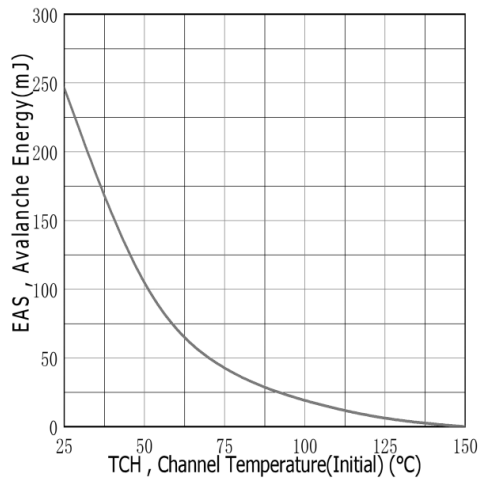


Figure.9 Maximum EAS vs Channel Temperature

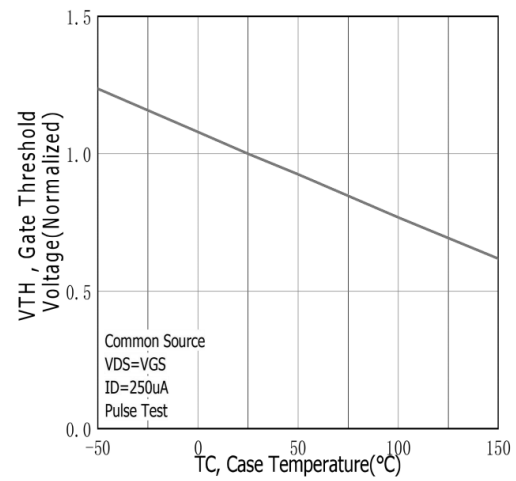


Figure.10 Typical Threshold Voltage vs Case Temperature

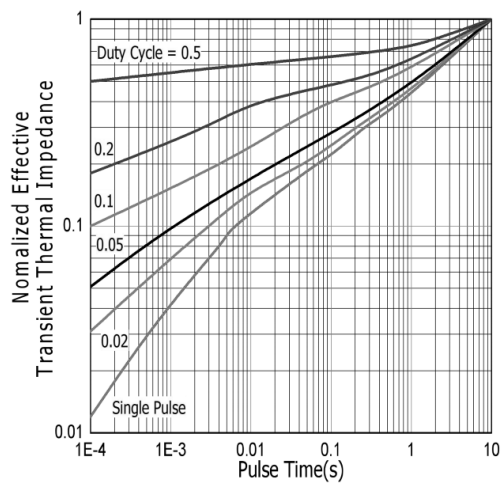


Figure.11 Maximum Effective Thermal Impedance , Junction to Case

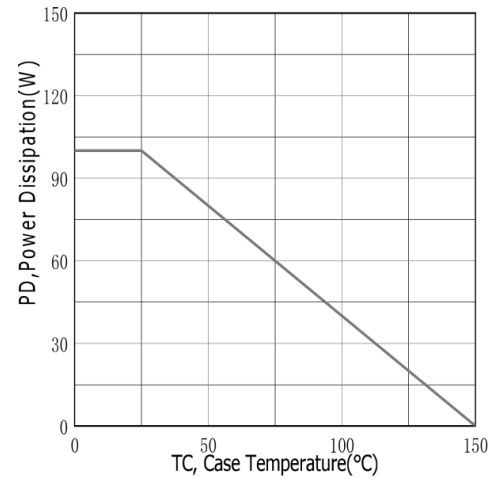
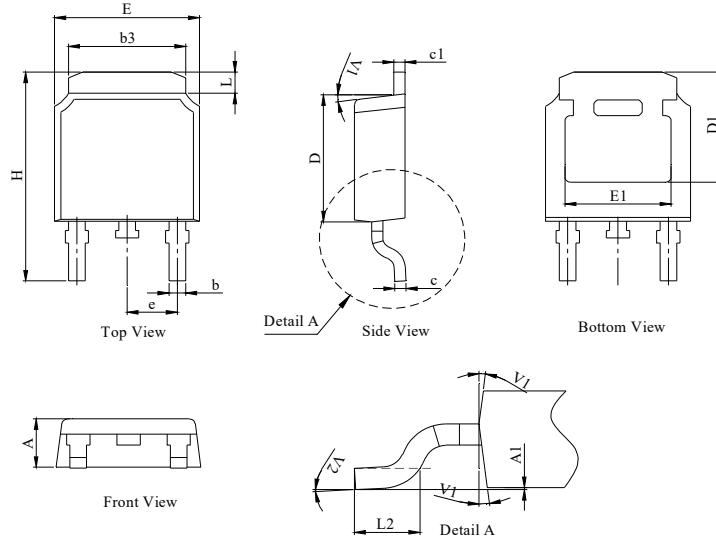


Figure.12 Maximum Power Dissipation vs Case Temperature

TO-252 Package Information

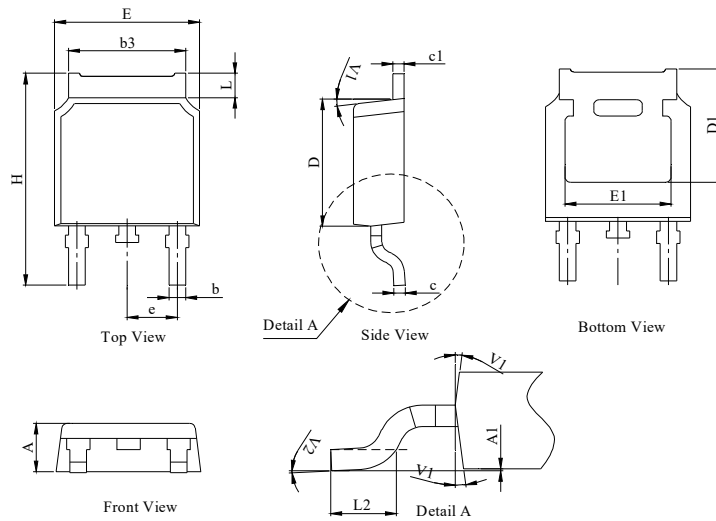
Package Outline Type-A

UNIT: mm



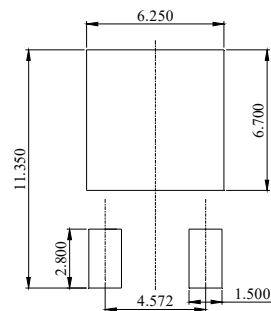
DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	2.18	2.30	2.39
A1	0	--	0.13
b	0.64	0.76	0.89
c	0.40	0.50	0.61
c1	0.46	0.50	0.58
D	5.97	6.10	6.23
D1	5.05	--	--
E	6.35	6.60	6.73
E1	4.32	--	--
b3	5.21	5.38	5.55
e	2.29 BSC		
H	9.40	10.00	10.40
L	0.89	--	1.27
L2	1.40	--	1.78
V1	7° REF		
V2	0°	--	6°

Package Outline Type-B



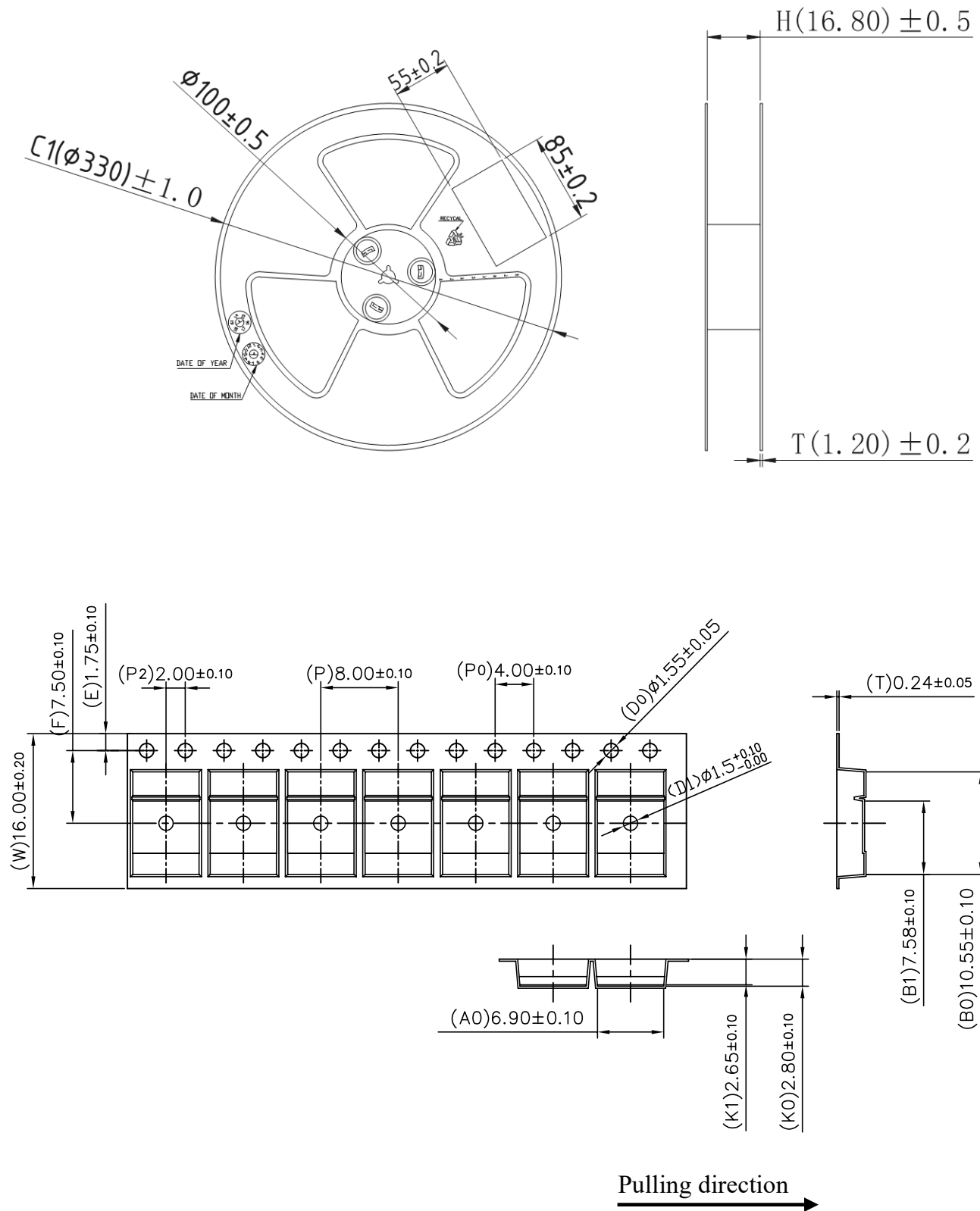
DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	2.10	2.30	2.40
A1	0	--	0.13
b	0.66	0.76	0.86
b3	5.21	5.38	5.55
c	0.40	0.50	0.60
c1	0.44	0.50	0.58
D	5.90	6.10	6.30
D1	5.30 REF		
E	6.40	6.60	6.80
E1	4.63	-	-
e	2.29 BSC		
H	9.50	10.00	10.70
L	1.09	--	1.21
L2	1.35	--	1.65
V1	7° REF		
V2	0°	--	6°

Recommended Soldering Footprint



Tape & Reel Information

Dimensions in mm



Marking Information:

①. Doingter LOGO

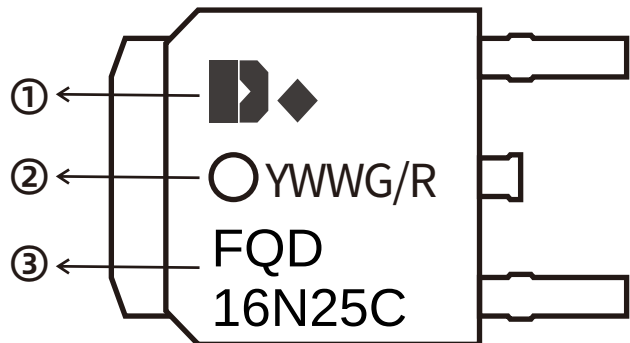
②. Date Code(YWWG / R)

Y : Year Code , last digit of the year

WW : Week Code(01-53)

G/R : G(Green) /R(Lead Free)

③. Part NO.

**Previous Version**

Version	Date	Subjects (major changes since last revision)
1.0	2024-09-22	Release of final version

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