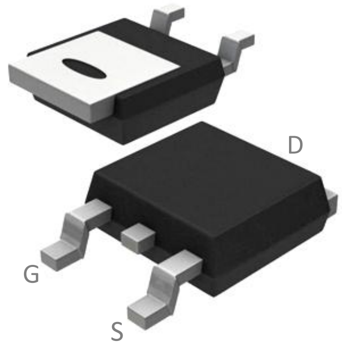
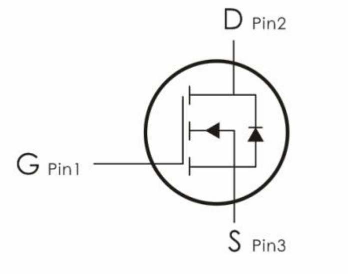
Description：

This N-Channel MOSFET uses advanced super junction 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}=650V,I_D=20A,$R_{DS(ON)}$<150mΩ @V_{GS}=10V（Typ：130mΩ）
2) Low gate charge.
3) Green device available.
4) Advanced high cell denity super junction technology for ultra low $R_{DS(ON)}$.
5) Excellent package for good heat dissipation.
6) Intrinsic Fast-recovery Body Diode
7) MSL3

Package Marking and Ordering Information：

Part NO.	Marking	Package	Packing
DO150DFSG	O150DFS	TO- 252	2500 pcs/Reel

Absolute Maximum Ratings： (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	650	V
V_{GS}	Gate-Source Voltage	±30	V
I_D	Continuous Drain Current[1]	20	A
	Continuous Drain Current-T_C=100℃[1]	14	
I_{DM}	Pulsed Drain Current[2]	80	
P_D	Power Dissipation	120	W
E_{AS}	Single pulse avalanche energy[3]	281	mJ
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55-+150	℃

Thermal Characteristics：

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance,Junction to Case	0.78	℃/W
$R_{\theta JA}$	Thermal Resistance,Junction to Ambient	60	℃/W

Electrical Characteristics： (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{GS}=0V,I_D=250μA	650	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=650V	---	---	10	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±30V, V_{DS}=0A	---	---	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate-Source Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	3	4	5	V
$R_{DS(ON)}$	Drain-Source On Resistance[4]	V_{GS}=10V,I_D=10A	---	130	150	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=50V, V_{GS}=0V, f=1MHz	---	1300	---	pF
C_{oss}	Output Capacitance		---	115	--	
C_{rss}	Reverse Transfer Capacitance		---	2	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DS}=400V, I_D=15A, R_{ENG}=5Ω,V_{GS}=10V	---	45	---	ns
t_r	Rise Time		---	22	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	52	---	ns
t_f	Fall Time		---	15.5	---	ns
Q_g	Total Gate Charge	V_{GS}=10V, V_{DS}=400V, I_D=15A	---	17.5	---	nC
Q_{gs}	Gate-Source Charge		---	7	---	nC
Q_{gd}	Gate-Drain “Miller” Charge		---	7.5	---	nC
Drain-Source Diode Characteristics						
V_{SD}	Diode Forward Voltage	V_{GS}=0V, I_{SD}=10A	---	0.8	1.2	V
I_S	Continuous Drain Curren	V_D=V_G=0V	---	---	20	A
I_{SM}	Pulsed Drain Current		---	---	80	A
Trr	Reverse Recovery Time	I_F=15A,T_J=25℃ dI/dt=100A/us	---	120	---	ns
Qrr	Reverse Recovery Charge		---	1.6	---	μC

Notes:

1. Computed continuous current assumes the condition of $T_{j,Max}$ while the actual continuous current depends on the thermal & electro-mechanical application board design
2. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
3. EAS condition : TJ=25℃,VDD=325V,V_G=10V,L=10mH
4. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

Typical Characteristics： (T$_C$=25℃ unless otherwise noted)

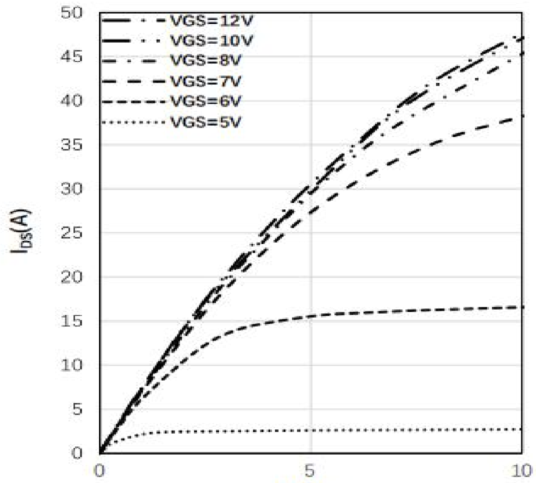


Fig.1 Typical Output Characteristics (25°C)

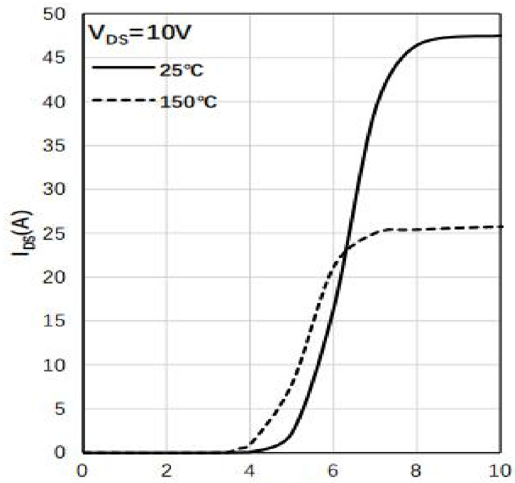


Fig.2 Typical Transfer Characteristics

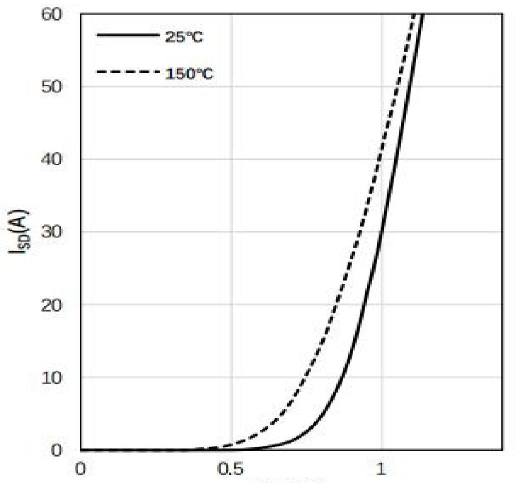


Fig.3 Typical Diode V_{SD} vs. I_{SD} Characteristic

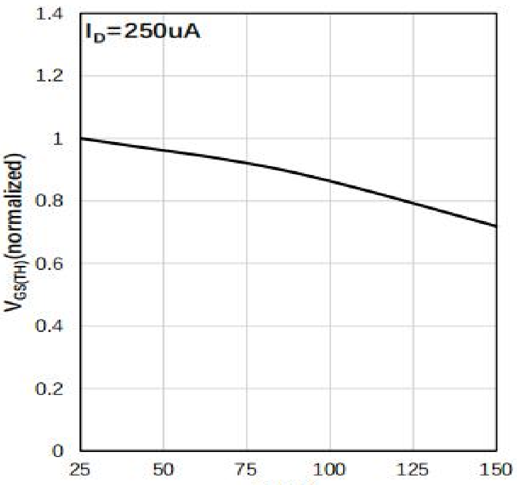


Fig.4 Threshold Voltage vs Temperature Characteristic

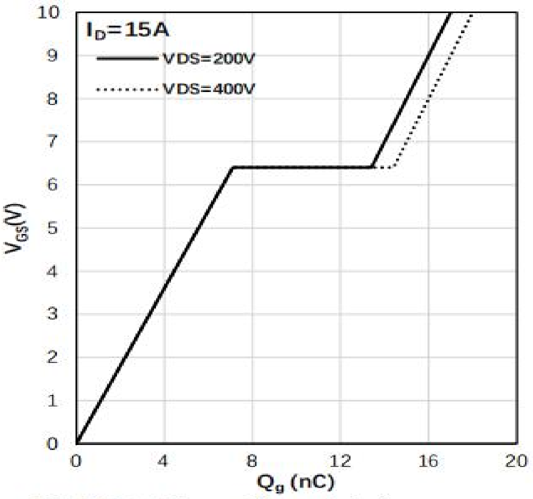


Fig.5 Gate Charge Characteristics

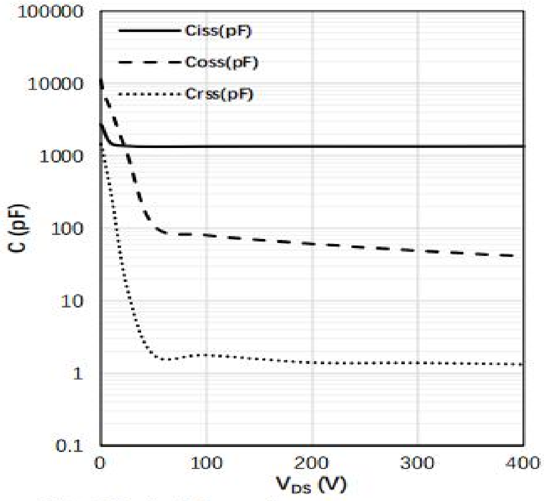


Fig.6 Typical Capacitance

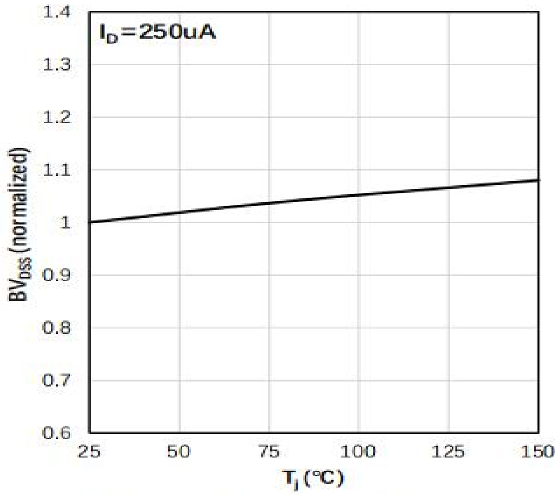


Fig.7 Breakdown Voltage vs. Temperature Characteristic

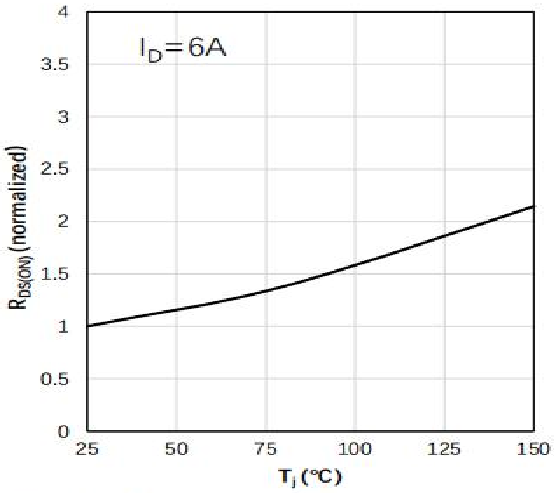


Fig.8 On Resistance vs. Temperature Characteristic

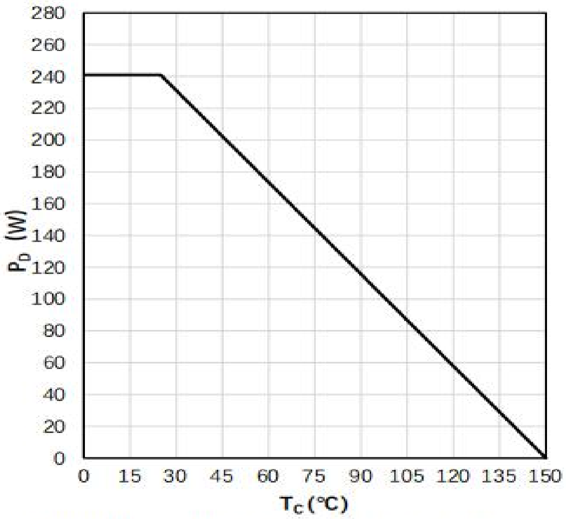


Fig.9 Power Dissipation Characteristic

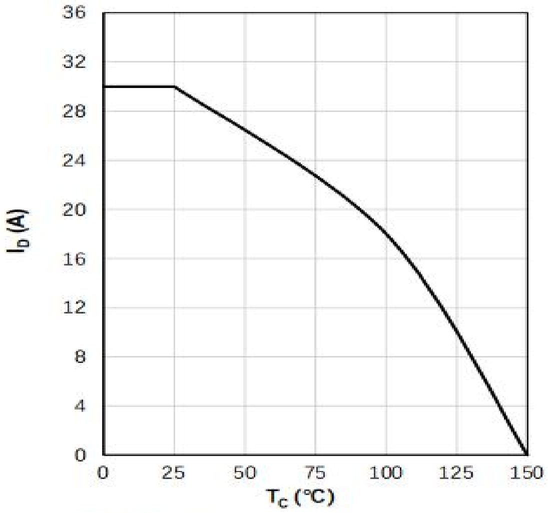


Fig.10 Drain Current vs. Temperature Characteristic

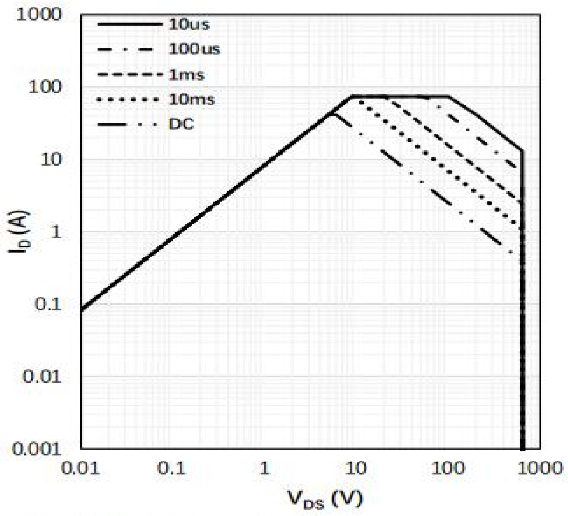


Fig.11 Safe Operating Area

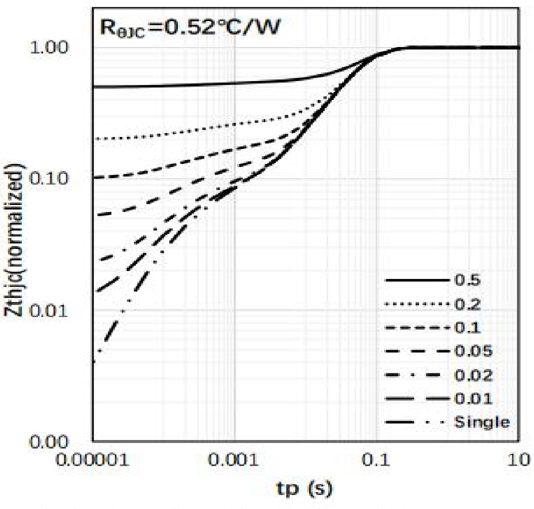
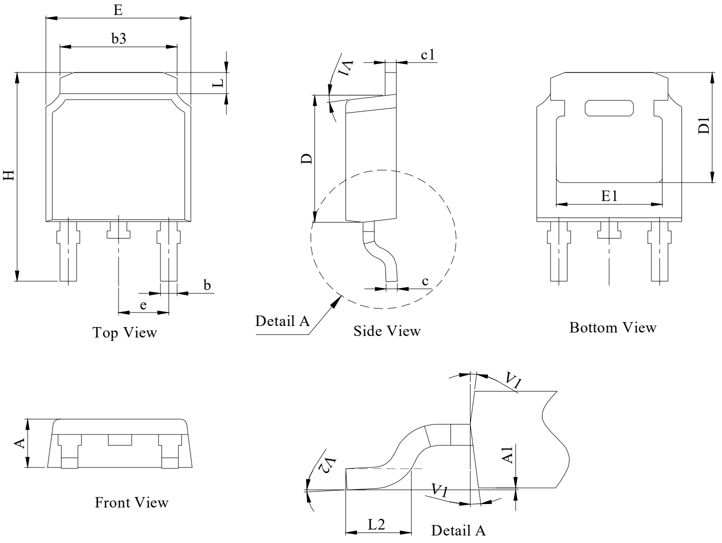


Fig.12 Transient Thermal Impedance

TO-252 Package Information

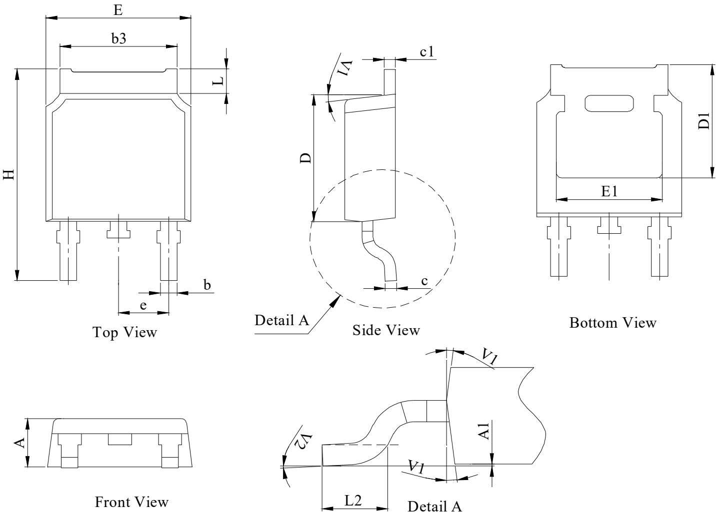
Package Outline Type-A

UNIT: mm



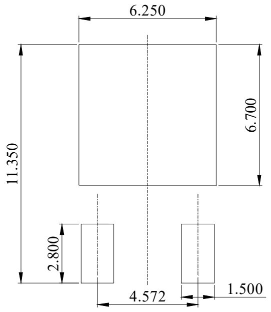
DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	2.18	2.30	2.39
A1	0	--	0.13
b	0.64	0.76	0.89
c	0.40	0.50	0.61
c1	0.46	0.50	0.58
D	5.97	6.10	6.23
D1	5.05	--	--
E	6.35	6.60	6.73
E1	4.32	--	--
b3	5.21	5.38	5.55
e	2.29 BSC		
H	9.40	10.00	10.40
L	0.89	--	1.27
L2	1.40	--	1.78
V1	7° REF		
V2	0°	--	6°

Package Outline Type-B



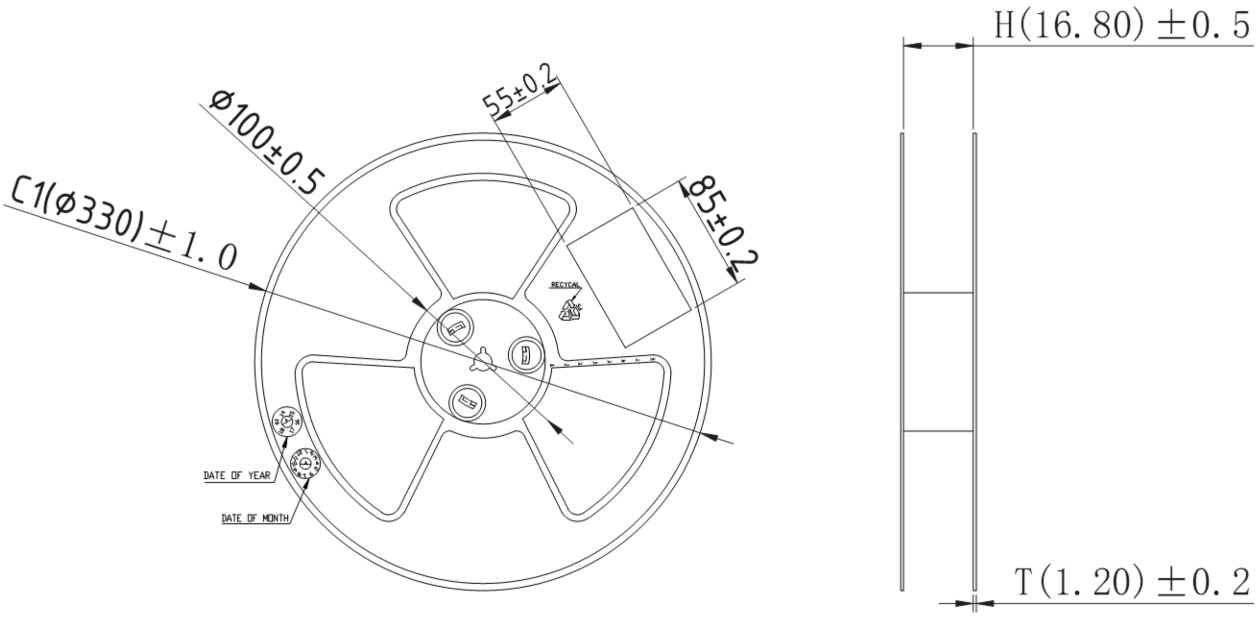
DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	2.10	2.30	2.40
A1	0	--	0.13
b	0.66	0.76	0.86
b3	5.21	5.38	5.55
c	0.40	0.50	0.60
c1	0.44	0.50	0.58
D	5.90	6.10	6.30
D1	5.30REF		
E	6.40	6.60	6.80
E1	4.63	-	-
e	2.29 BSC		
H	9.50	10.00	10.70
L	1.09	--	1.21
L2	1.35	--	1.65
V1	7° REF		
V2	0°	--	6°

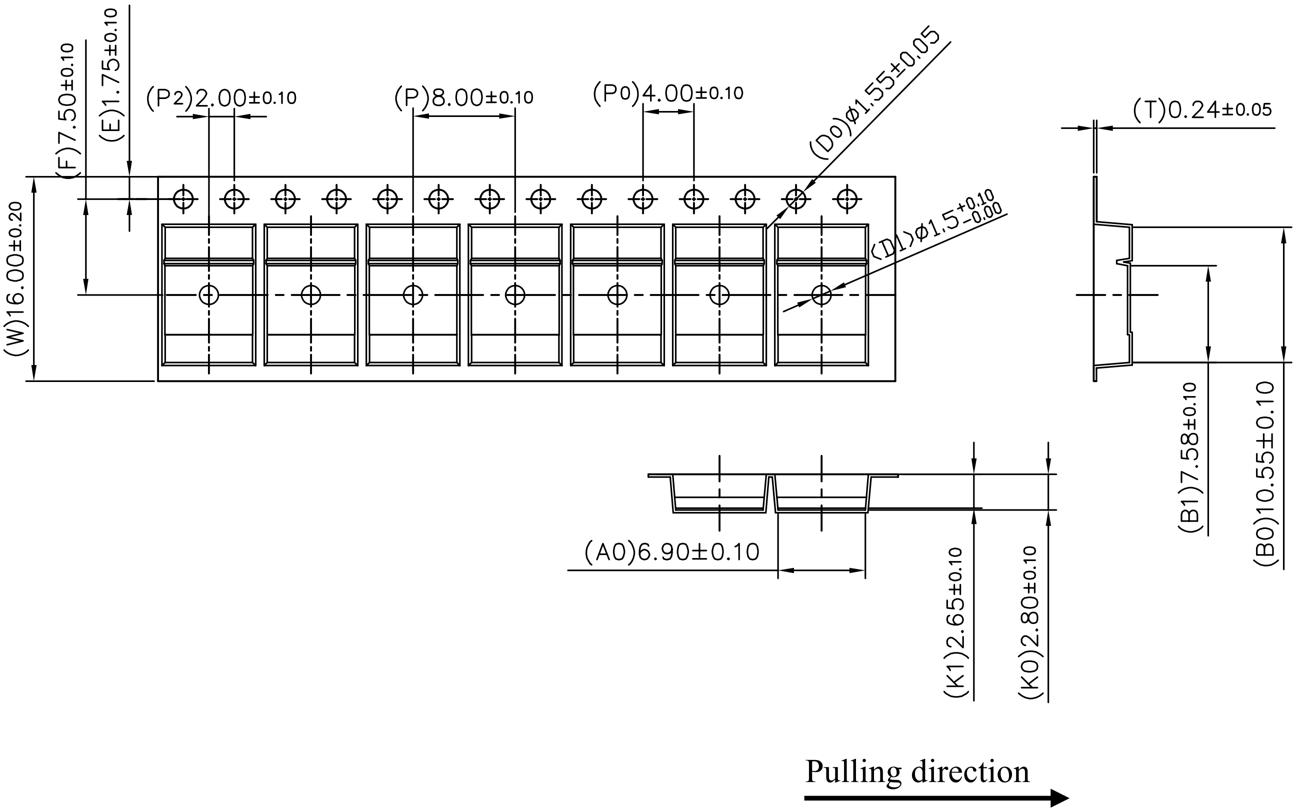
Recommended Soldering Footprint



Tape & Reel Information

Dimensions in mm





Marking Information：

①. Doingter LOGO

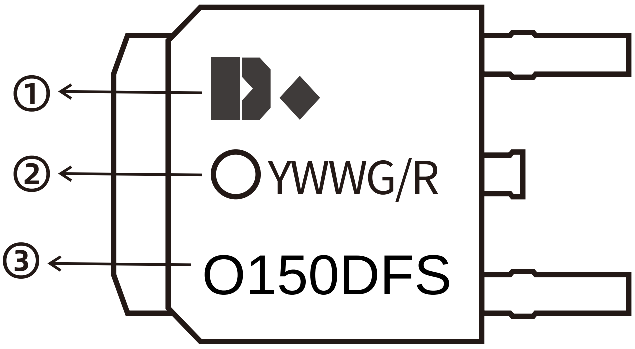
②. Date Code(YWWG / R)

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	2024-05-29	**Release of final version**

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