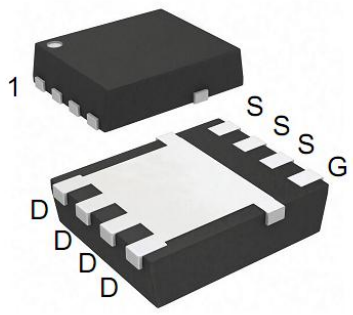
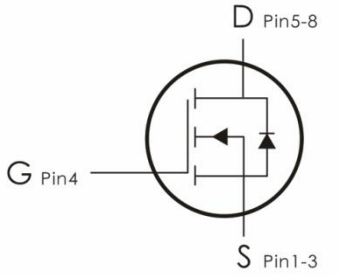
Description：

This N-Channel MOSFET uses advanced SGT 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}=30V,I_D=220A,$R_{DS(ON)}$<1.2mΩ @V_{GS}=10V（Typ：1mΩ）
2) Low gate charge.
3) Green device available.
4) Advanced high cell denity 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
DON220N03T	220N03T	DFN5*6-8	5000 pcs/Reel

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

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Continuous Drain Current-T_C=25℃	220	A
	Continuous Drain Current-T_C=100℃	130	
I_{DM}	Pulsed Drain Current[2]	450	
E_{AS}	Single Pulse Avalanche Energy[3]	180	mJ
P_D	Power Dissipation -T_C=25℃	100	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	℃

Thermal Characteristics：

Symbol	Parameter	Max	Units
$R_{\Theta JC}$	Thermal Resistance,Junction to Case	0.95	℃/W
$R_{\Theta JA}$	Thermal Resistance,Junction to Ambient	62	℃/W

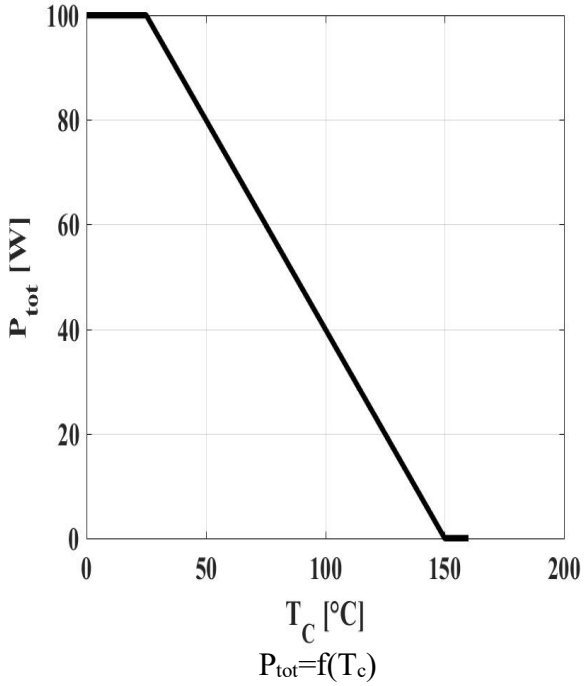
Electrical Characteristics: (T_J=25℃ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{GS}=0V,I_D=250μA	30	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=30V	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V, V_{DS}=0V	---	---	±100	nA
On Characteristics						
$V_{GS(th)}$	GATE-Source Threshold Voltage	V_{GS}=V_{DS}, I_D=0.25mA	1	1.5	2	V
$R_{DS(ON)}$	Drain-Source On Resistance	V_{GS}=10V,I_D=20 A	---	1	1.2	mΩ
		V_{GS}=4.5V,I_D=10 A	---	1.3	1.6	
Dynamic Characteristics						
C_{iss}	Input Capacitance [4]	V_{DS}=15V, V_{GS}=0V, f=1MHz	5	7.15	9.2	nF
C_{oss}	Output Capacitance[4]		2	2.9	3.8	nF
C_{rss}	Reverse Transfer Capacitance [4]		149	549	949	pF
Switching Characteristics[4]						
$t_{d(on)}$	Turn-On Delay Time	V_{DD}=15V,I_D=100A,R_G=1.6Ω V_{GS}=10V	---	12	---	ns
t_r	Rise Time		---	9	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	50	---	ns
t_f	Fall Time		---	9	---	ns
Q_g	Total Gate Charge	V_{GS}=0 to 10V, V_{DD}=15V, I_D=100A	---	90	---	nC
Q_{gs}	Gate-Source Charge		---	17	---	nC
Q_{gd}	Gate-Drain “Miller” Charge		---	16	---	nC
Drain-Source Diode Characteristics						
Symbol	**Parameter**	**Conditions**	**Min**	**Typ**	**Max**	**Units**
V_{SD}	Source-Drain Diode Forward Voltage	V_{GS}=0V,I_{SD}=100A	---	0.86	1.1	V
Trr	Reverse Recovery Time	V_R=15V, I_F=100A dI_F/dt=100A/us	---	55	110	ns
Qrr	Reverse Recovery Charge		---	70	140	nc
I_S	Continuous Source Current	VG=VD=0V	---	---	220	A
I_{SM}	Pulsed Source Current		---	---	450	A

Notes:

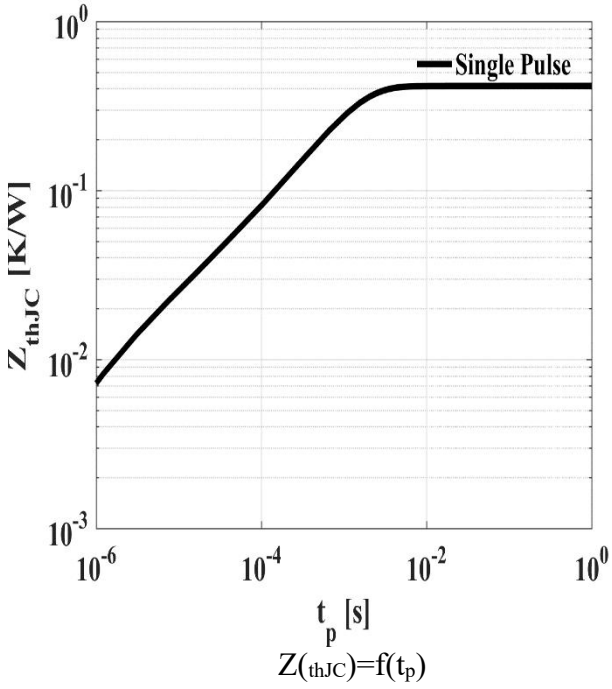
1. Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.
2. Repetitive Rating: Pulse width limited by maximum junction temperature
3. I_{AS}= 60.0A, V_{DD}= 30V, R_G= 25Ω, Starting T_J= 25°C
4. Defined by design. Not subject to production test.

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



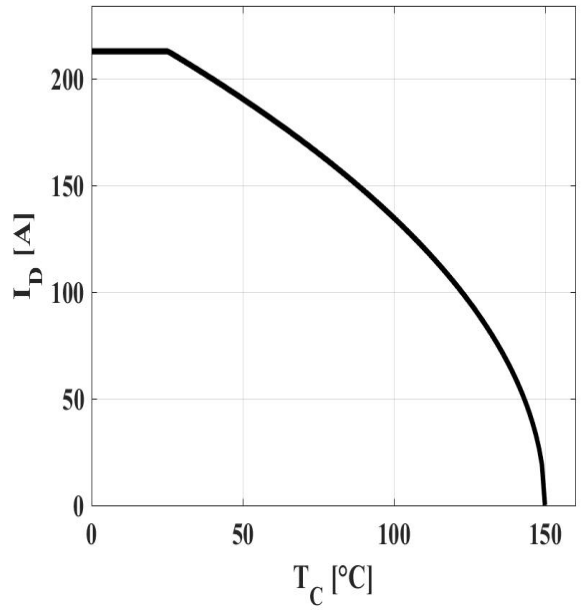
$P_{tot}=f(T_c)$

Figure 1: Power Dissipation



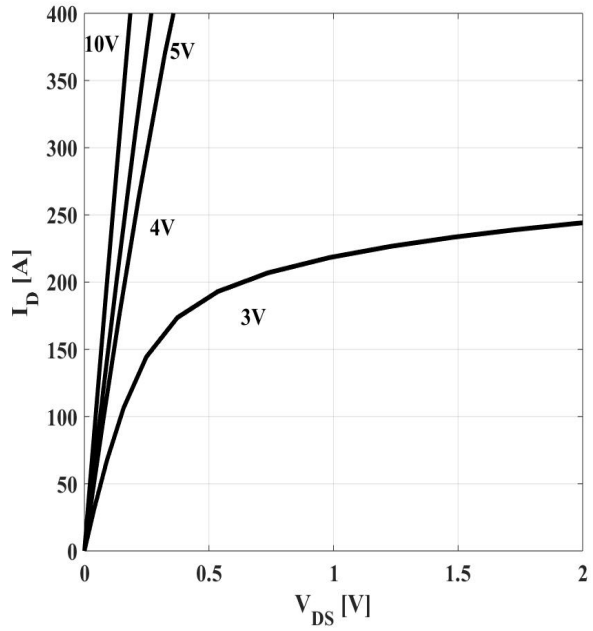
$Z_{(thJC)}=f(t_p)$

Figure 2: Typ. Transient Thermal Impedance



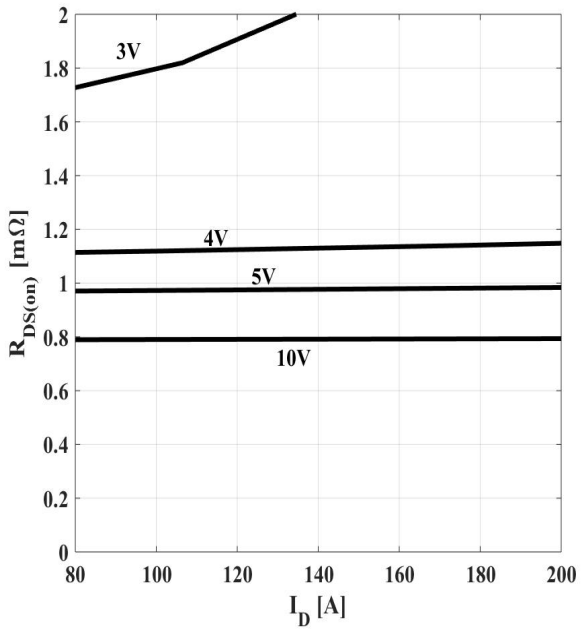
$I_D=f(T_C)$;$V_{GS}\geq 10V$

Figure 3: Drain Current



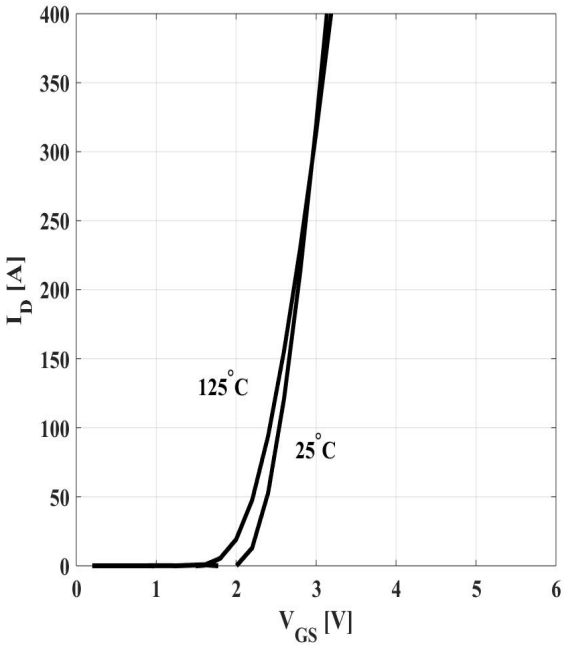
$I_D=f(V_{DS})$;Tj=25ºC; parameter:V_{GS}

Figure 4: Typ. Output Characteristics



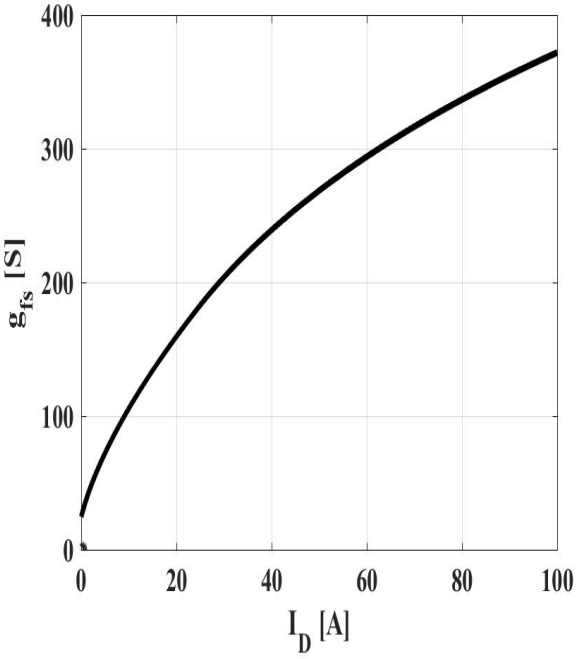
$R_{DS(ON)}$=f(I_D);T_j=25ºC; parameter:V_{GS}

Figure5: Typ. Drain-Source On-State Resistance



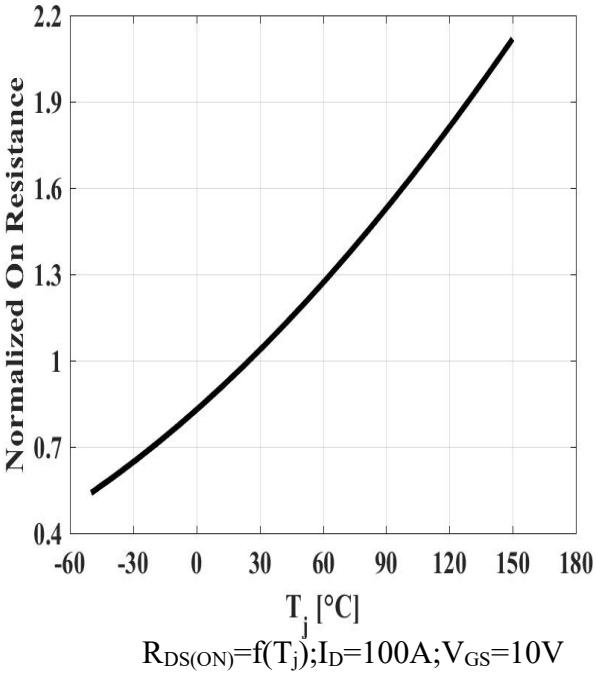
I_D=f(V_{GS}); |V_{DS}|>2|I_D|$R_{DS(on)max}$; parameter: T_j

Figure6: Typ. Transfer Characteristics



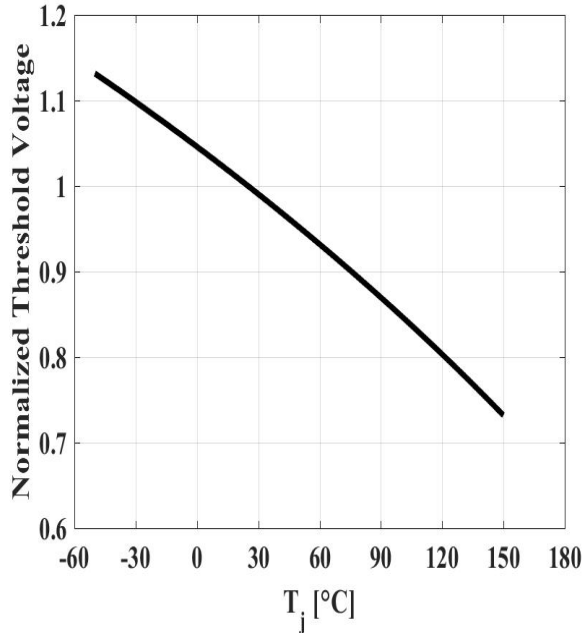
g_{fs}=f(I_D); T_j=25℃

Figure 7: Typ. Forward Transconductance



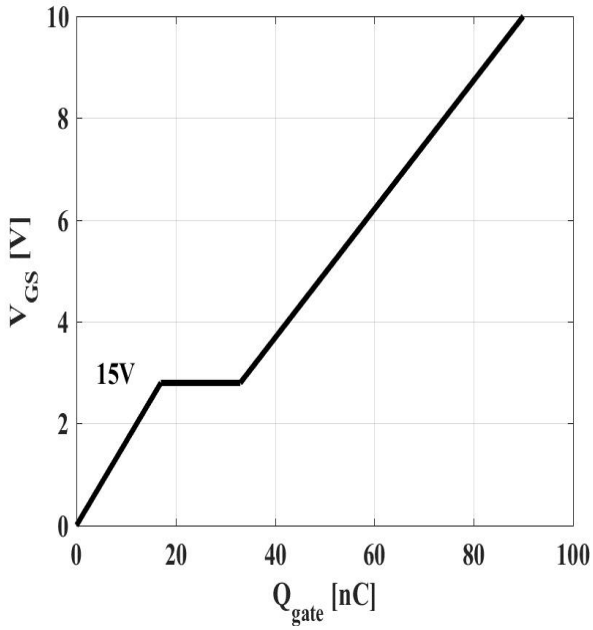
$R_{DS(ON)}$=f(T_j);I_D=100A;V_{GS}=10V

Figure 8: Typ. Drain-Source On-State Resistance



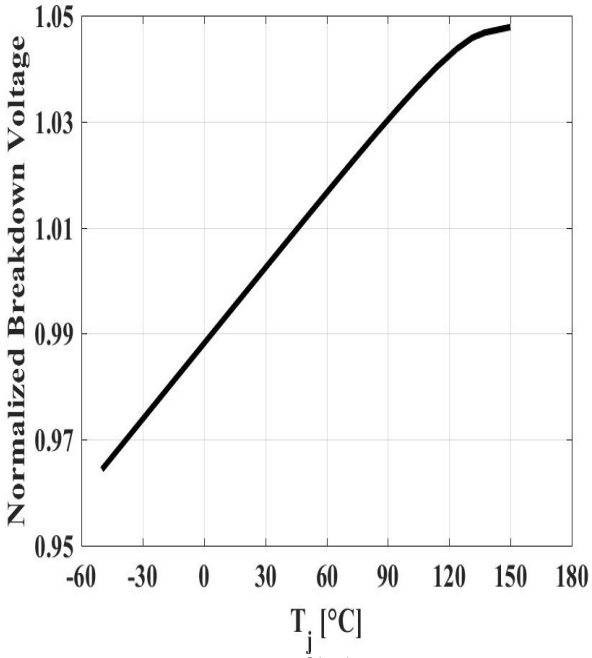
$V_{GS(th)}=f(T_j)$; $V_{GS}=V_{DS}$; $I_{DS}=250\mu A$

Fig ure9 : Typ.Gate Threshold Voltage



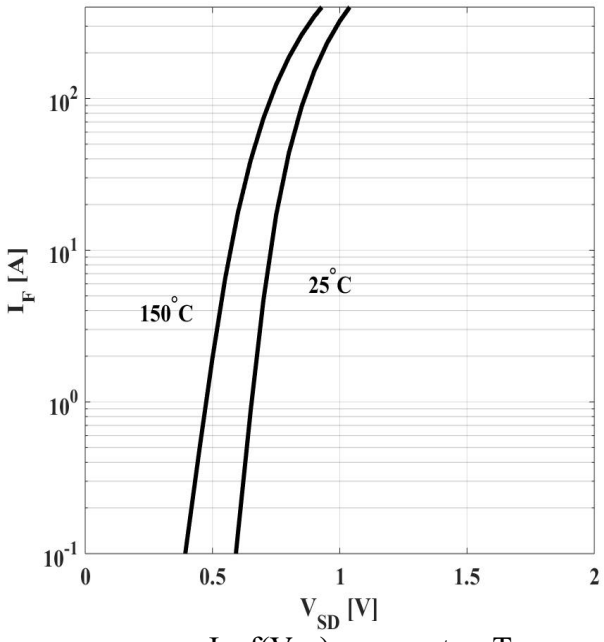
$V_{GS}= f(Q_{gate})$, $I_D=50A$ pulsed

Figure 10: Typ. Gate Charge



$V_{BR(DSS)}=f(T_j)$; $I_D=1mA$

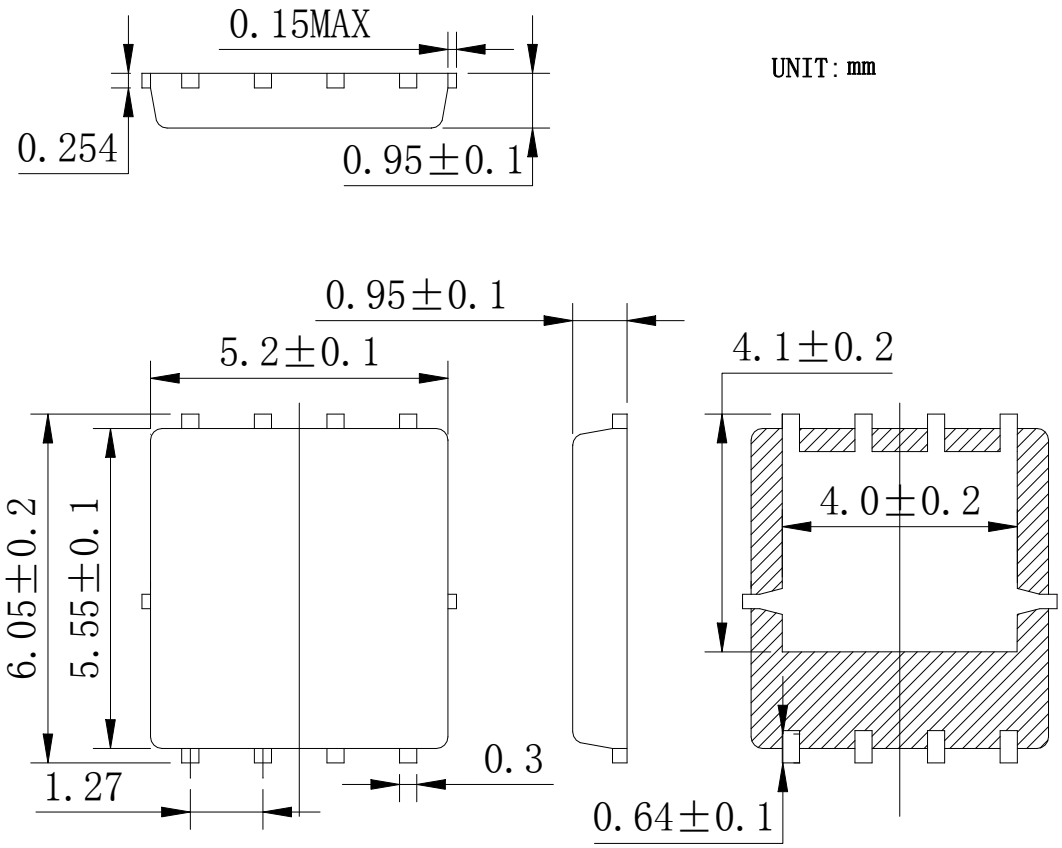
Figure 11: Drain-Source Breakdown Voltage



$I_F=f(V_{SD})$; parameter: T_j

Figure 12: Forward Characteristics of Reverse Diode

DFN5×6-8 Package Information：



Marking Information：

①. Doingter LOGO

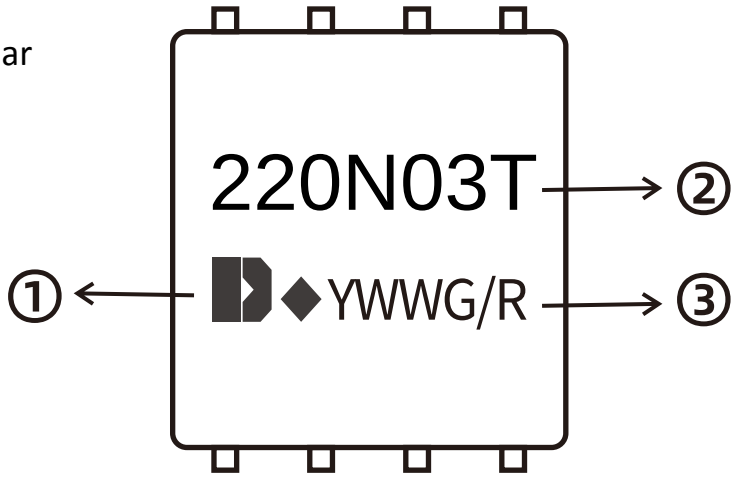
②. Part NO.

③. Date Code(YWWG / R)

Y：Year Code，last digit of the year

WW：Week Code(01-53)

G/R：G(Green) /R(Lead Free)



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