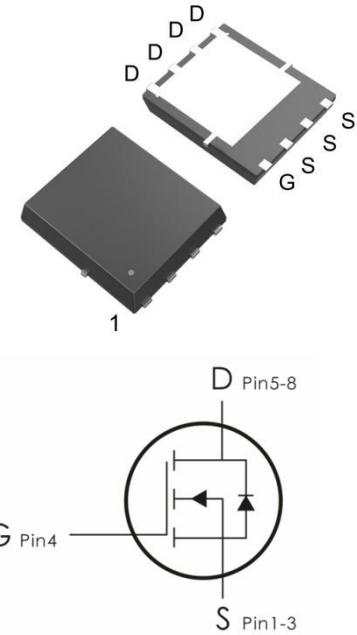


Description:

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) $V_{DS}=60V, I_D=90A, R_{DS(ON)}<5.5m\Omega @V_{GS}=10V$
- 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.
- 6) MSL3

Package Marking and Ordering Information:

Part NO.	Marking	Package	Packing
DON90N06T	90N06T	DFN5*6-8	5000 pcs/Reel

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

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current	90	A
	Continuous Drain Current- $T_C=100^\circ C$	55	
I_{DM}	Pulsed Drain Current ¹	360	
P_D	Power Dissipation	78	W
E_{AS}	Single pulse avalanche energy ²	121	mJ
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55-+150	°C

Thermal Characteristics:

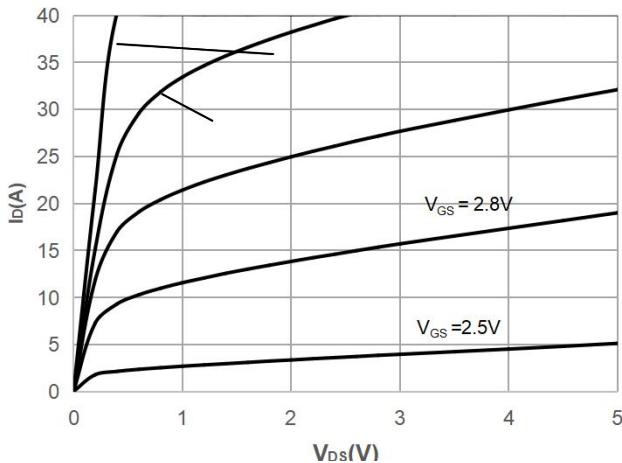
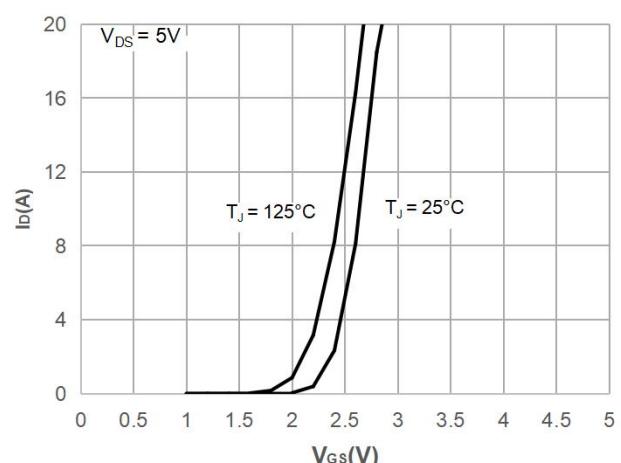
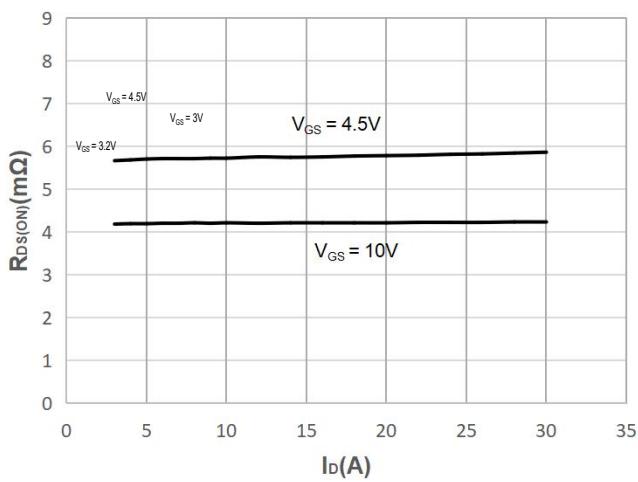
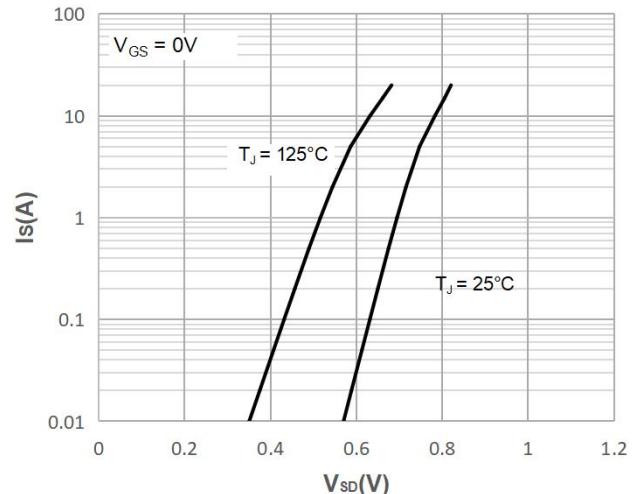
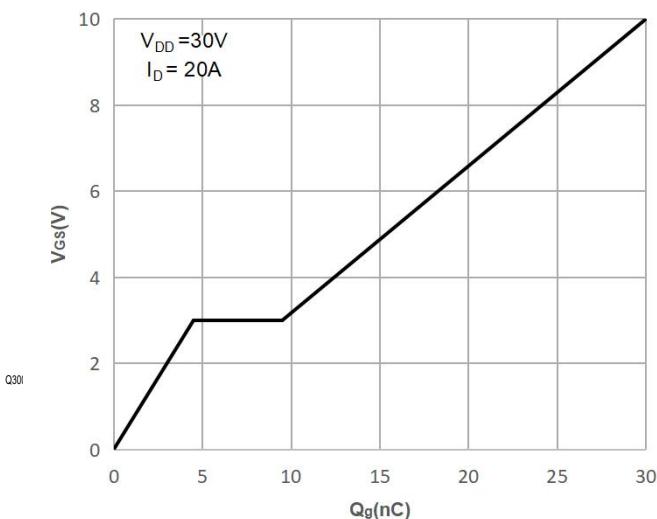
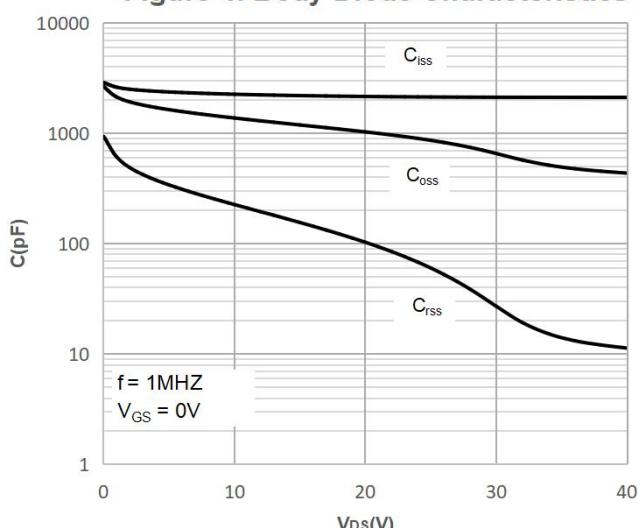
Symbol	Parameter	Max	Units
$R_{ThetaJC}$	Thermal Resistance,Junction to Case	1.6	°C/W

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{\text{GS}}=0\text{V}, I_{\text{D}}=250 \mu\text{A}$	60	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{\text{GS}}=0\text{V}, V_{\text{DS}}=60\text{V}$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{\text{GS}}=\pm 20\text{V}, V_{\text{DS}}=0\text{A}$	---	---	± 100	nA
On Characteristics <small>(Note3)</small>						
$V_{\text{GS(th)}}$	Gate-Source Threshold Voltage	$V_{\text{GS}}=V_{\text{DS}}, I_{\text{D}}=250 \mu\text{A}$	1.2	1.8	2.5	V
$R_{\text{DS(ON)}}$	Drain-Source On Resistance ³	$V_{\text{GS}}=10\text{V}, I_{\text{D}}=30\text{A}$	---	4.2	5.5	$\text{m}\Omega$
		$V_{\text{GS}}=4.5\text{V}, I_{\text{D}}=20\text{A}$	---	7	10	
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{\text{DS}}=25\text{V}, V_{\text{GS}}=0\text{V}, f=1\text{MHz}$	---	2150	---	pF
C_{oss}	Output Capacitance		---	854.2	--	
C_{rss}	Reverse Transfer Capacitance		---	60.3	---	
Switching Characteristics						
$t_{\text{d(on)}}$	Turn-On Delay Time	$V_{\text{DS}}=30\text{V}, I_{\text{D}}=20\text{A}, R_{\text{G}}=6 \Omega, V_{\text{GS}}=10\text{V}$	---	6.5	---	ns
t_r	Rise Time		---	8.04	---	ns
$t_{\text{d(off)}}$	Turn-Off Delay Time		---	38.1	---	ns
t_f	Fall Time		---	16	---	ns
Q_g	Total Gate Charge	$V_{\text{GS}}=10\text{V}, V_{\text{DS}}=30\text{V}, I_{\text{D}}=20\text{A}$	---	30.1	---	nC
Q_{gs}	Gate-Source Charge		---	4.5	---	nC
Q_{gd}	Gate-Drain "Miller" Charge		---	5	---	nC
Drain-Source Diode Characteristics						
V_{SD}	Diode Forward Voltage	$V_{\text{GS}}=0\text{V}, I_{\text{SD}}=30\text{A}$	---	---	1.2	V
I_s	Continuous Drain Current	$V_D=V_G=0\text{V}$	---	---	90	A
I_{SM}	Pulsed Drain Current		---	---	360	A
Tr_r	Reverse Recovery Time	$I_F=30\text{A}, T_J=25^\circ\text{C}$	---	39	---	ns
Q_{rr}	Reverse Recovery Charge	$dI/dt=100\text{A}/\mu\text{s}$	---	45	---	nC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition : $T_J=25^\circ\text{C}$, $V_{DD}=50\text{V}$, $V_G=10\text{V}$, $L=0.5\text{mH}$
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: Output Characteristics

Figure 2: Typical Transfer Characteristics

Figure 3: On-resistance vs. Drain Current

Figure 4: Body Diode Characteristics

Figure 5: Gate Charge Characteristics

Figure 6: Capacitance Characteristics

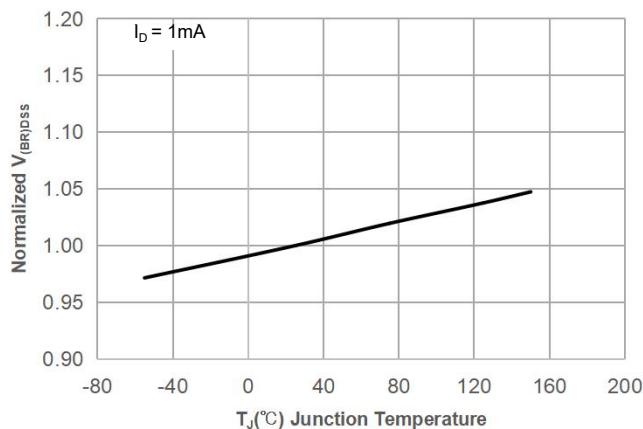


Figure 7: Normalized Breakdown voltage vs. Junction Temperature

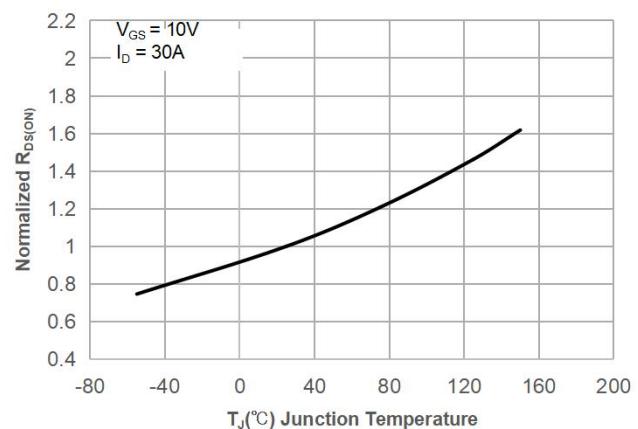


Figure 8: Normalized on Resistance vs. Junction Temperature

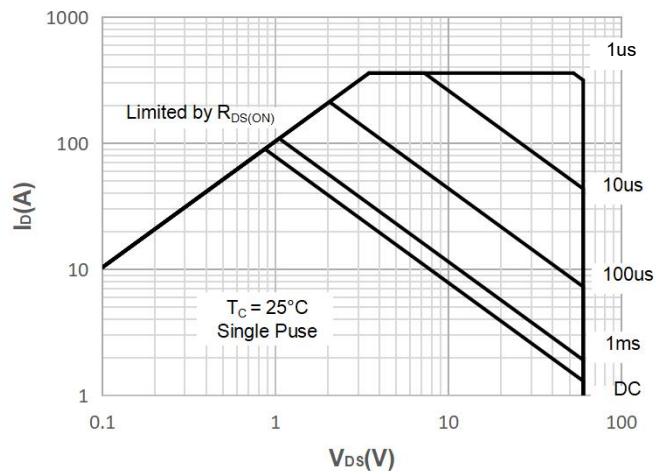


Figure 9: Maximum Safe Operating Area

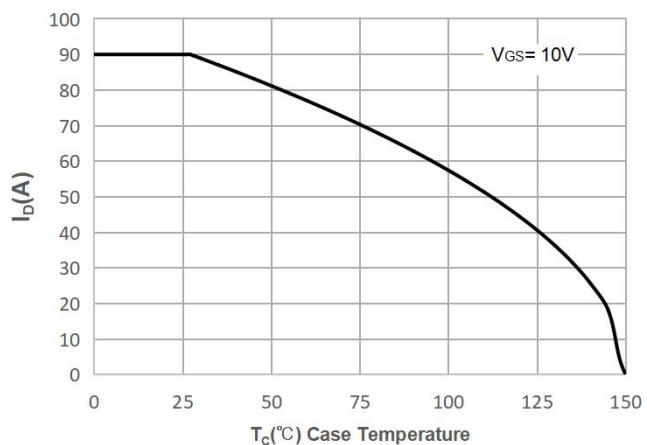


Figure 10: Maximum Continuous Drian Current vs. Case Temperature

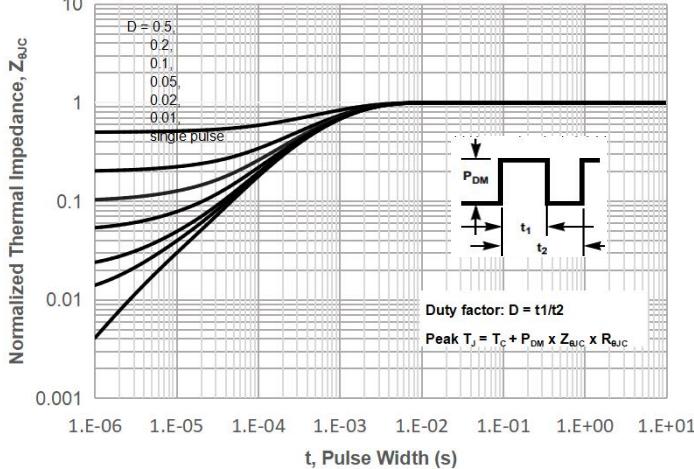


Figure 11: Normalized Maximum Transient Thermal Impedance

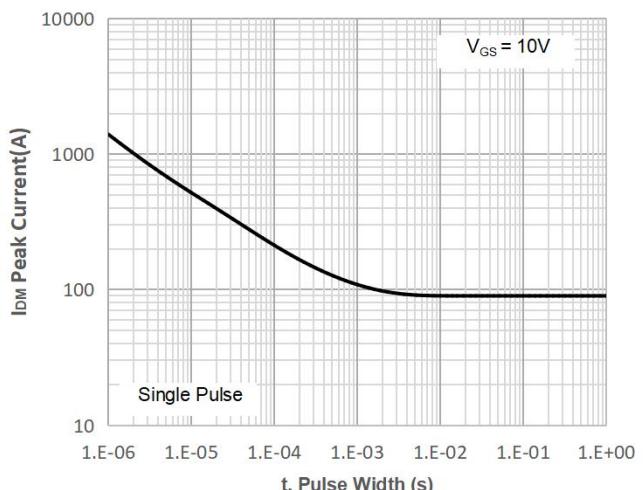
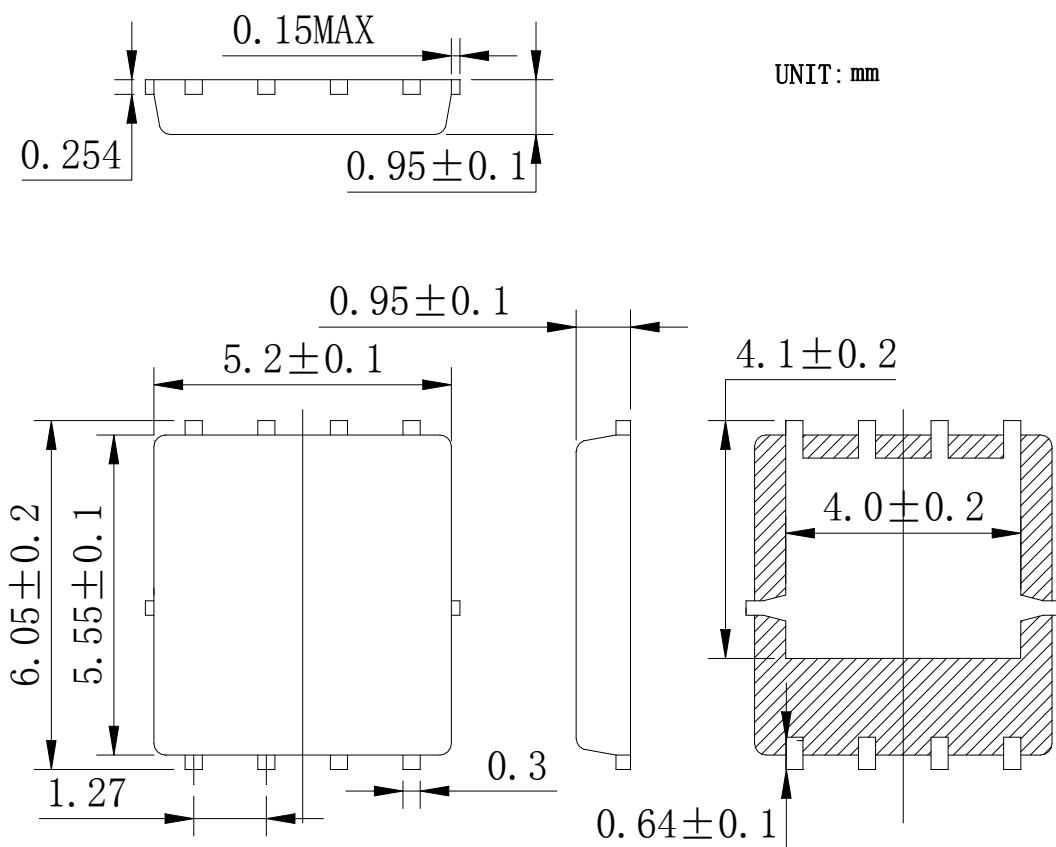


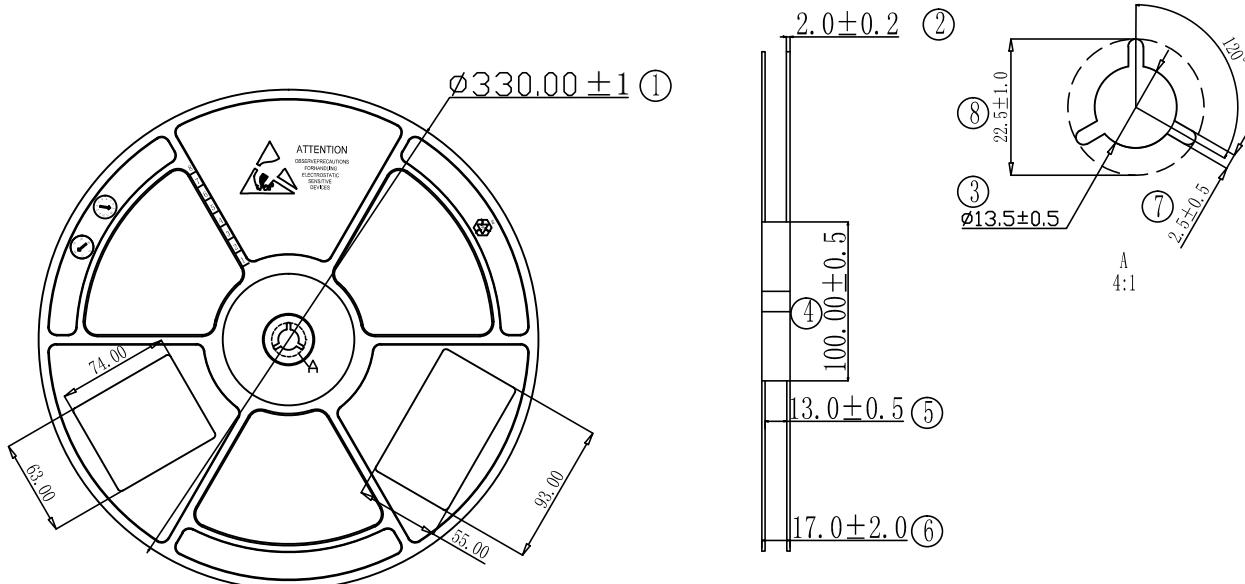
Figure 12: Peak Current Capacity

DFN5×6-8 Package Information:

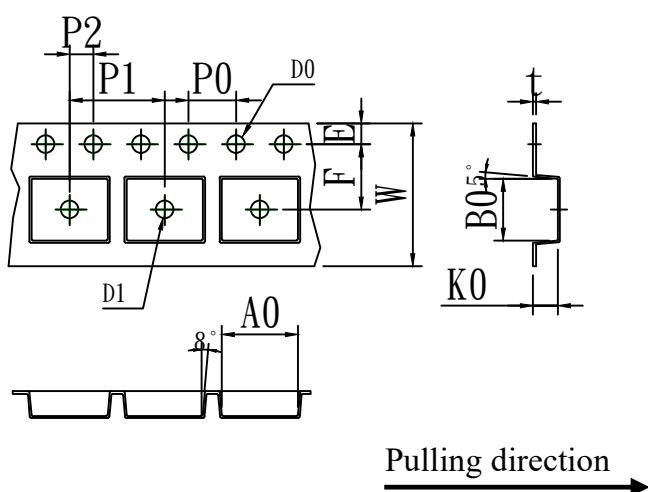


Tape & Reel Information

Dimensions in mm



Symbol	A0	B0	K0	D0	D1	P0	P1	10*P0
Spec	6.15 ± 0.10	5.40 ± 0.10	1.30 ± 0.10	1.55 ± 0.10	1.55 ± 0.10	4.00 ± 0.10	8.00 ± 0.10	40.00 ± 0.10
Symbol	W	E	F	P2	t			
Spec	12.00 ± 0.10	1.75 ± 0.10	5.50 ± 0.10	2.00 ± 0.10	0.20 ± 0.05			



Marking Information:

①. Doingter LOGO

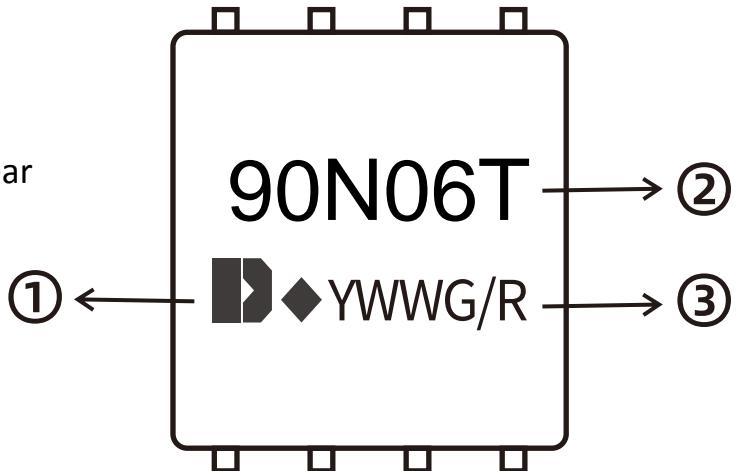
②. Part NO.

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)



Previous Version

Version	Date	Subjects (major changes since last revision)
1.0	2024-09-16	Release of final version

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