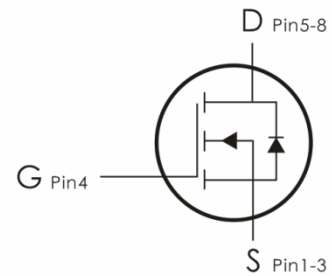
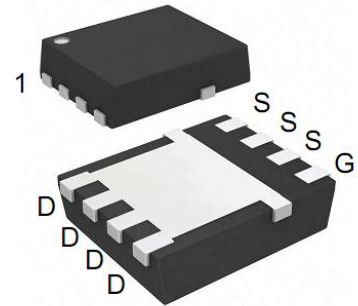


Description:

This N-Channel MOSFET uses advanced trench 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) $V_{DS}=30V, I_D=120A, R_{DS(ON)} < 3.3 m\Omega @ V_{GS}=10V$
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra $R_{DS(ON)}$.
- 5) Excellent package for good heat dissipation.



Package Marking and Ordering Information:

Part NO.	Marking	Package	Packing
DON120N03	120N03	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	30	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current- $T_C=25^\circ C$	120	A
	Continuous Drain Current- $T_C=100^\circ C$	57	
	Pulsed Drain Current	360	
E_{AS}	Single Pulse Avalanche Energy	185	mJ
P_D	Power Dissipation	155	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ C$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case ²	0.8	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance Junction to mbient	62	$^\circ C/W$

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\ \mu\text{A}$	30	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{GS}=0V, V_{DS}=30V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0A$	---	---	± 100	nA
On Characteristics³						
$V_{GS(th)}$	GATE-Source Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\ \mu\text{A}$	1	1.6	2.5	V
$R_{DS(ON)}$	Drain-Source On Resistance ²	$V_{GS}=10V, I_D=20A$	---	2.6	3.3	m Ω
		$V_{GS}=4.5V, I_D=10A$	---	3.5	5	
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=25V, V_{GS}=0V, f=1\text{MHz}$	---	2218	---	pF
C_{oss}	Output Capacitance		---	480	---	
C_{rss}	Reverse Transfer Capacitance		---	340	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time ^{3,4}	$V_{DD}=15V, I_D=15A, R_G=3.3\Omega$ $V_{GS}=10V$	---	12.6	---	ns
t_r	Rise Time ^{3,4}		---	19.5	---	ns
$t_{d(off)}$	Turn-Off Delay Time ^{3,4}		---	42.8	---	ns
t_f	Fall Time ^{3,4}		---	13.2	---	ns
Q_g	Total Gate Charge ^{3,4}	$V_{GS}=4.5V, V_{DS}=15V,$ $I_D=20A$	---	24	---	nC
Q_{gs}	Gate-Source Charge ^{3,4}		---	4.2	---	nC
Q_{gd}	Gate-Drain "Miller" Charge ^{3,4}		---	13	---	nC
Drain-Source Diode Characteristics						
Symbol	Parameter	Conditions	Min	Typ	Max	Units
V_{SD}	Source-Drain Diode Forward Voltage ³	$V_{GS}=0V, I_S=1A$	---	---	1	V
I_S	Continuous Source Current	$V_G=V_D=0V$, Force Current	---	---	120	A
I_{SM}	Pulsed Source Current		---	---	360	A
T_{rr}	Reverse Recovery Time	$V_{GS}=30V, I_S=1A$, $di/dt=100A/\mu\text{s}$	---	258	---	NS
Q_{rr}	Reverse Recovery Charge	$T_J=25^\circ\text{C}$	---	324	---	NC

Notes:

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. $V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=50A, R_G=25\Omega$, Starting $T_J=25^\circ C$.
3. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
4. Essentially independent of operating temperature.

Typical Characteristics: ($T_C=25^\circ C$ unless otherwise noted)

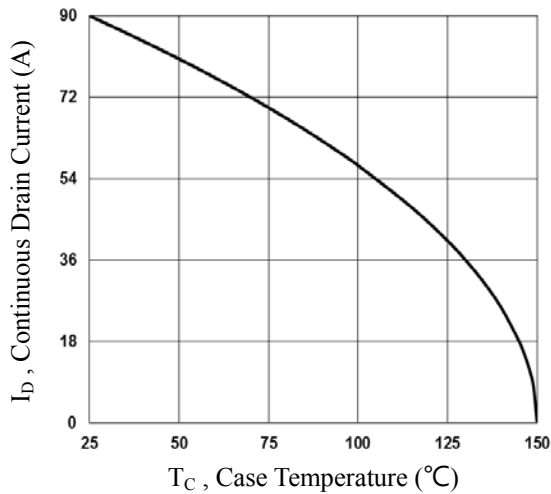


Fig.1 Continuous Drain Current vs. T_C

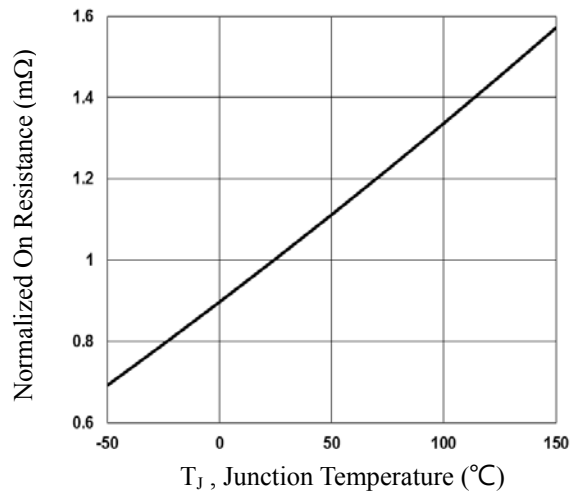


Fig.2 Normalized RDSON vs. T_J

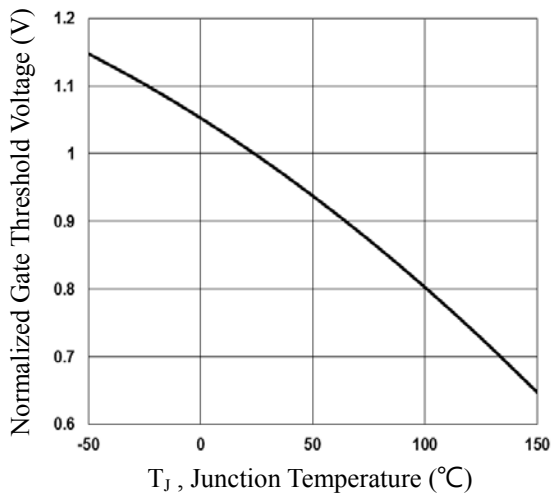


Fig.3 Normalized V_{th} vs. T_J

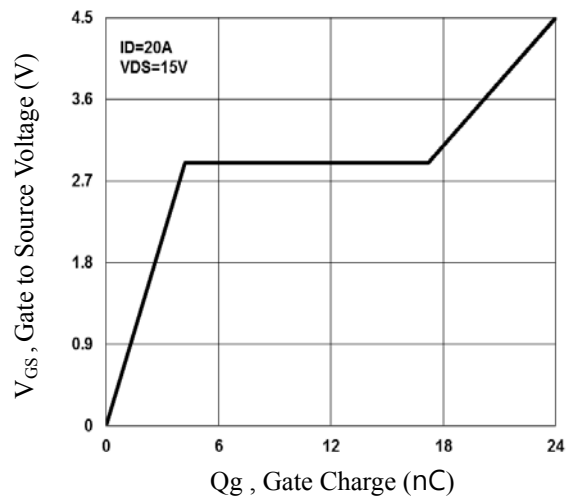


Fig.4 Gate Charge Waveform

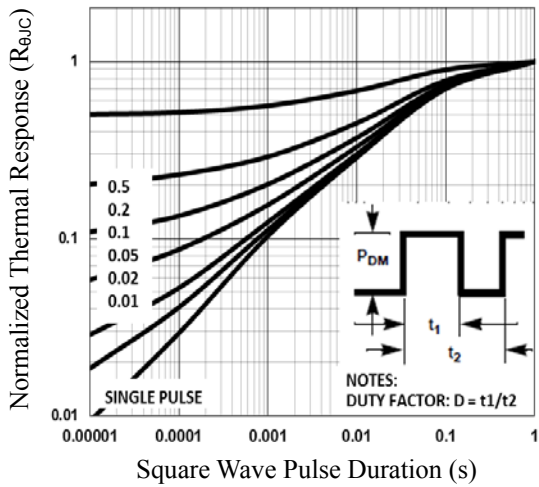


Fig.5 Normalized Transient Impedance

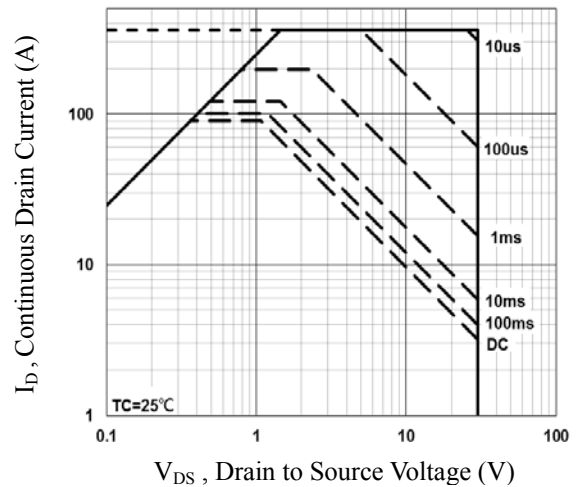


Fig.6 Maximum Safe Operation Area

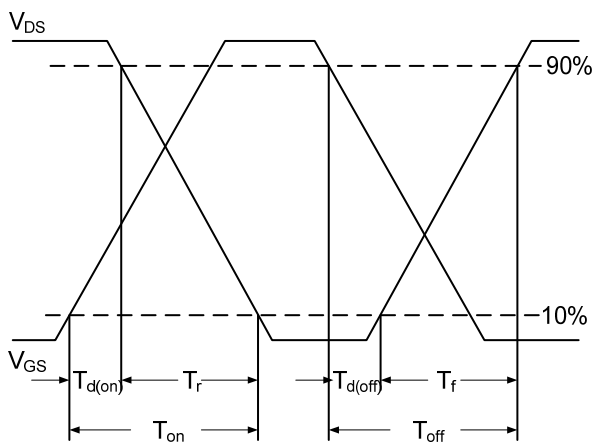


Fig.7 Switching Time Waveform

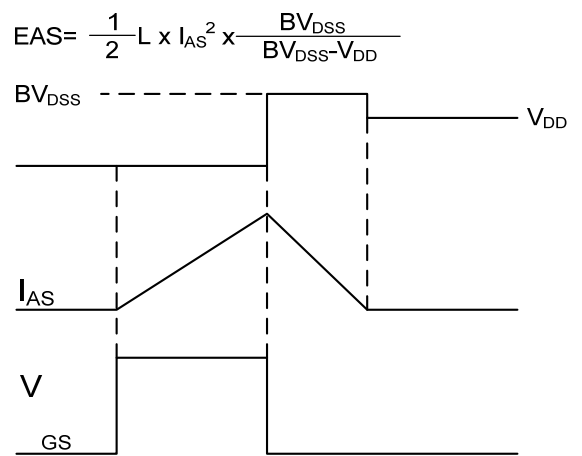
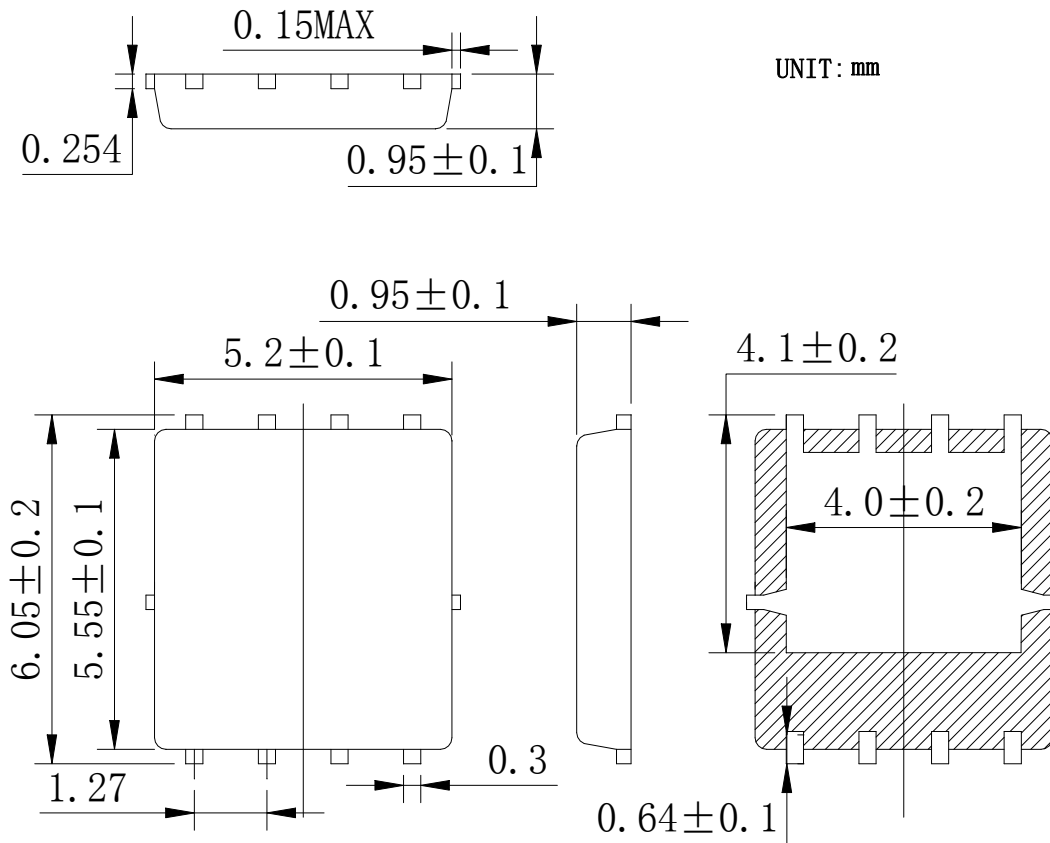


Fig.8 EAS Waveform

DFN5x6-8 Package Information:



Package Information:

①. Doingter LOGO

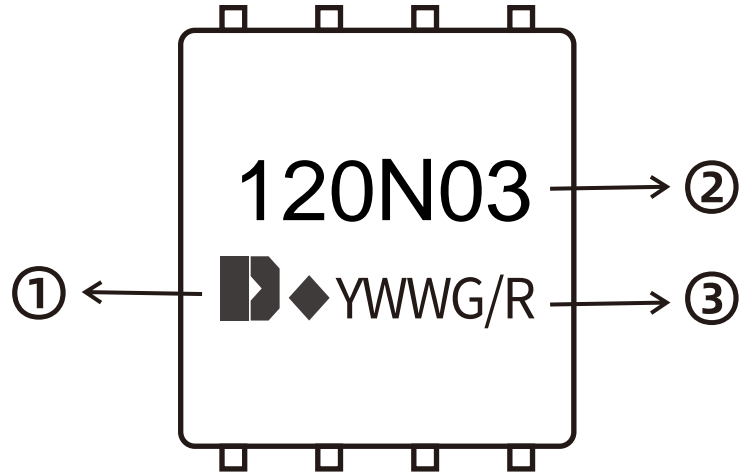
②. Part NO.

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	2023-07-10	Release of final version

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