

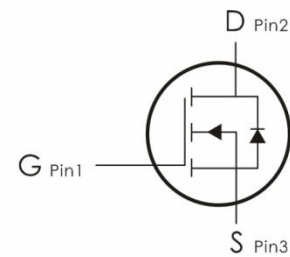
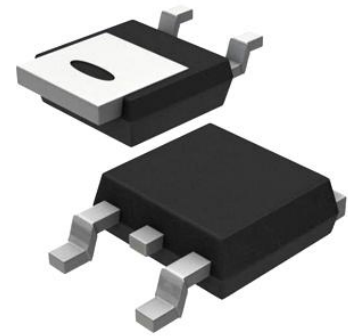
Description:

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) $V_{DS}=500V, I_D=5A, R_{DS(ON)} < 1500m\Omega @ V_{GS}=10V$
- 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.



Package Marking and Ordering Information:

Part NO.	Marking	Package	Packing
DM05NG	M05N	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	500	V
V_{GS}	Gate-Source Voltage	± 30	V
I_D	Continuous Drain Current	5	A
	Continuous Drain Current- $T_C=100^{\circ}C^1$	2.6	
I_{DM}	Pulsed Drain Current ⁴	20	
P_D	Power Dissipation	24.5	W
E_{AS}	Single pulse avalanche energy ²	167	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	4.2	$^{\circ}C/W$

R_{θJA}	Thermal Resistance, Junction to Ambient	48.2	°C/W
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Electrical Characteristics: (T_C=25°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 μ A	500	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =500V	---	---	1	μ A
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 =250 μ A	2	---	4	V
R _{DS(ON)}	Drain-Source On Resistance ¹	V _{GS} =10V, I _D =40A	---	1415	1500	m Ω
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1MHz	---	414	---	pF
C _{oss}	Output Capacitance		---	57	--	
C _{rss}	Reverse Transfer Capacitance		---	1.3	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time ^{4,5}	V _{DS} =250V, I _D =5A, R _{ENG} =25 Ω ,V _{GS} =10V	---	6	---	ns
t _r	Rise Time ^{4,5}		---	21	---	ns
t _{d(off)}	Turn-Off Delay Time ^{4,5}		---	14	---	ns
t _f	Fall Time ^{4,5}		---	22	---	ns
Q _{gs}	Total Gate Charge ^{4,5}	V _{GS} =10V, V _{DS} =400V, I _D =5A	---	4.9	---	nC
Q _{gd}	Gate-Source Charge ^{4,5}		---	2.3	---	nC
Q _g	Gate-Drain “Miller” Charge ^{4,5}		---	12	---	nC
Drain-Source Diode Characteristics						
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _{SD} =5A	---	---	1.2	V
I _S	Continuous Drain Curren	VD=VG=0V	---	---	5	A
I _{SM}	Pulsed Drain Current		---	---	20	A
T _{rr}	Reverse Recovery Time ⁴	I _F =5A, T _J =25 °C	---	289	---	NS
Q _{rr}	Reverse Recovery Charge ⁴	di/dt=100A/us	---	1.2	---	NC

Notes:

1. Repetitive Rating : Pulse width limited by maximum junction temperature
2. $L = 10.6 \text{ mH}$, $I_{AS} = 5 \text{ A}$, $V_{DD} = 50 \text{ V}$, $R_G = 25 \Omega$, Starting $T_J = 25^\circ\text{C}$
3. $I_{SD} \leq 5 \text{ A}$, $di/dt \leq 200 \text{ A/us}$, $V_{DD} \leq BVDSS$, Starting $T_J = 25^\circ\text{C}$
4. Pulse Test : Pulse width $\leq 300 \mu\text{s}$, Duty cycle $\leq 2\%$
5. Essentially independent of operating temperature

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

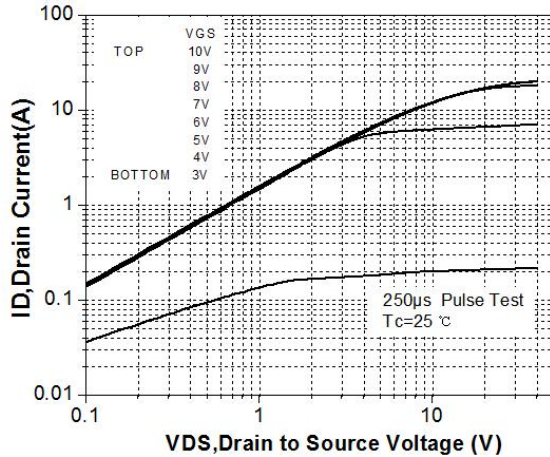


Figure 1. On-Region Characteristics

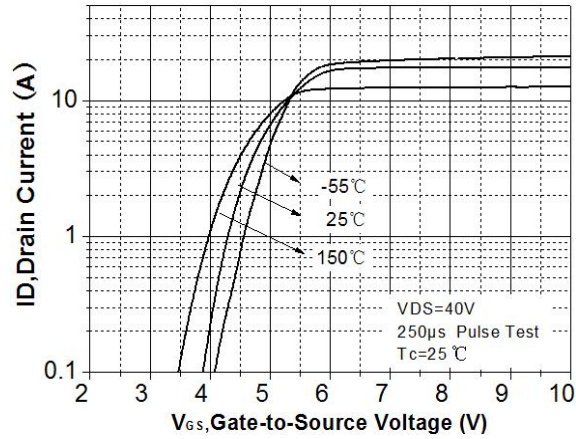


Figure 2. Transfer Characteristics

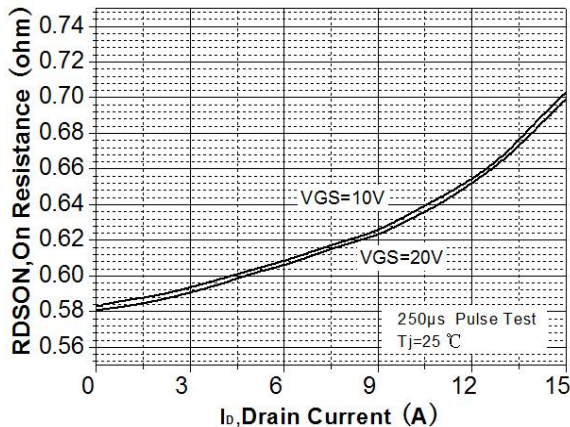


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

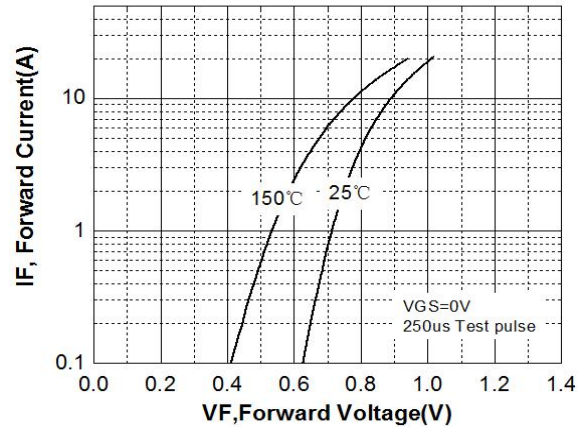


Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

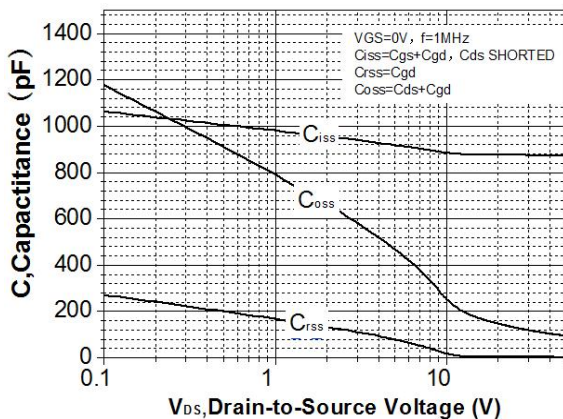


Figure 5. Capacitance Characteristics

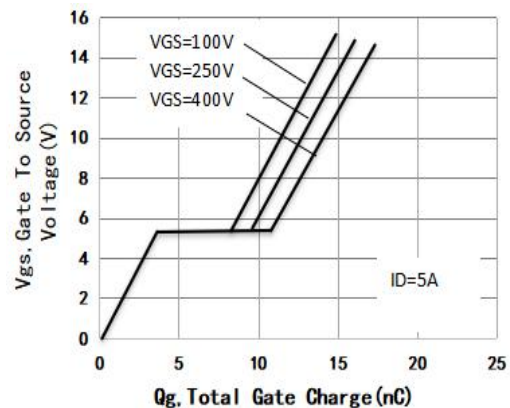
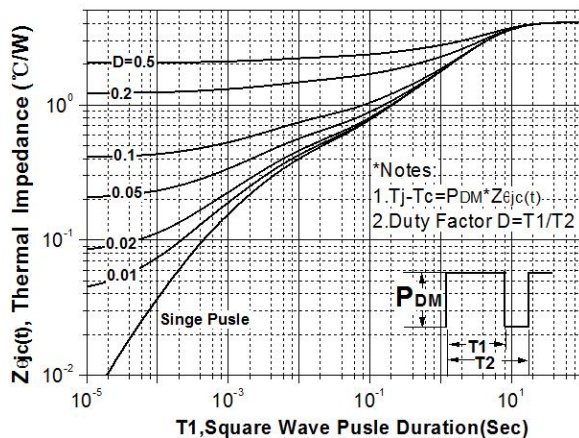
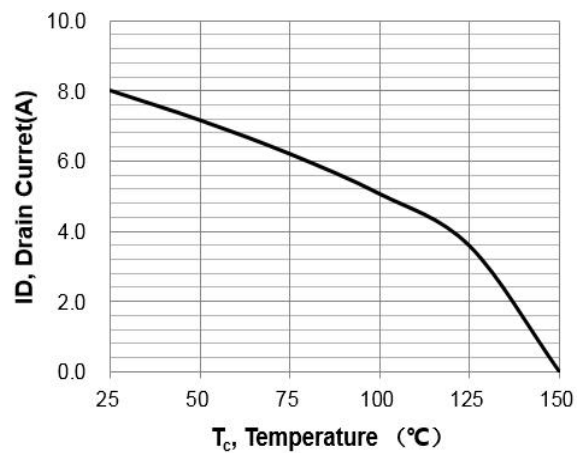
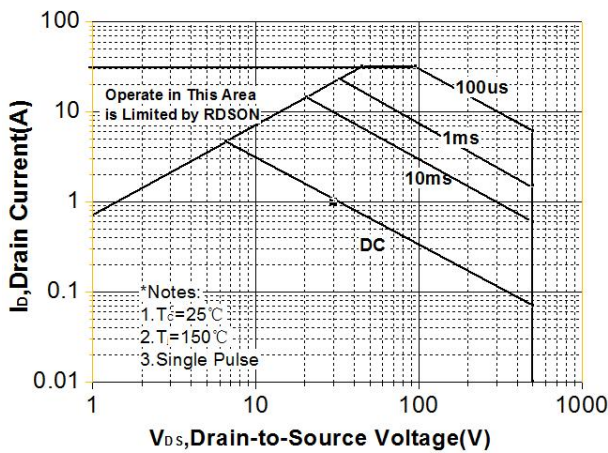
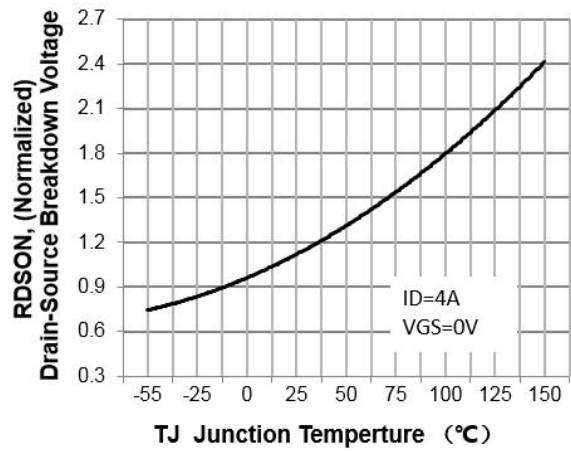
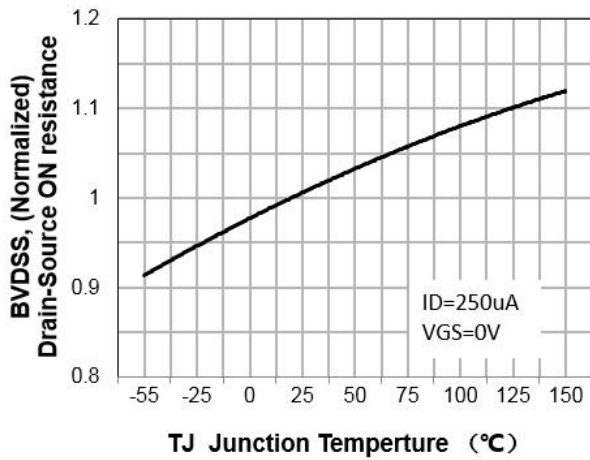


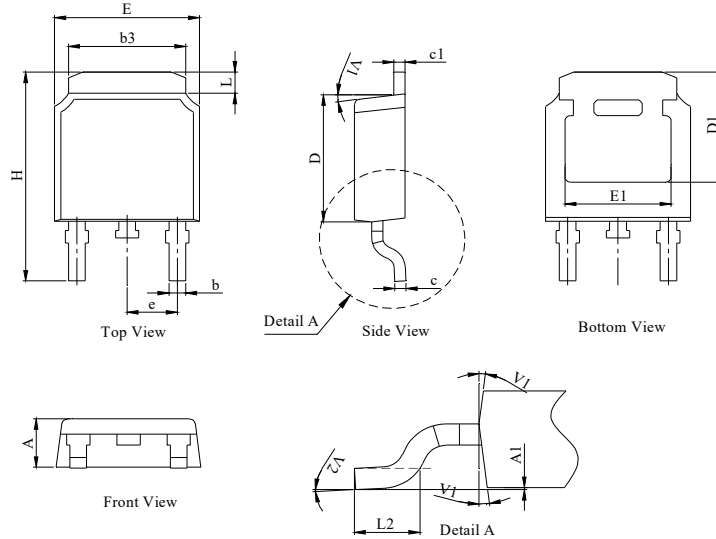
Figure 6. Gate Charge Characteristics



TO-252 Package Information

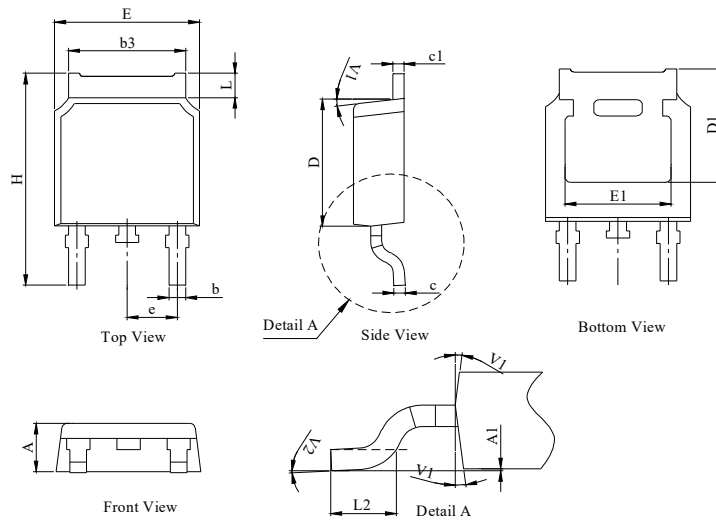
Package Outline Type-A

UNIT: mm



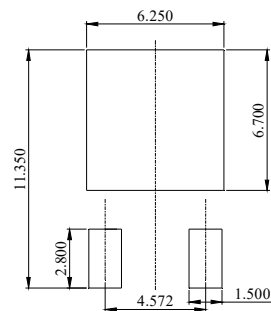
DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	2.18	2.30	2.39
A1	0	--	0.13
b	0.64	0.76	0.89
c	0.40	0.50	0.61
c1	0.46	0.50	0.58
D	5.97	6.10	6.23
D1	5.05	--	--
E	6.35	6.60	6.73
E1	4.32	--	--
b3	5.21	5.38	5.55
e	2.29 BSC		
H	9.40	10.00	10.40
L	0.89	--	1.27
L2	1.40	--	1.78
V1	7° REF		
V2	0°	--	6°

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



Package Information:

①. Doingter LOGO

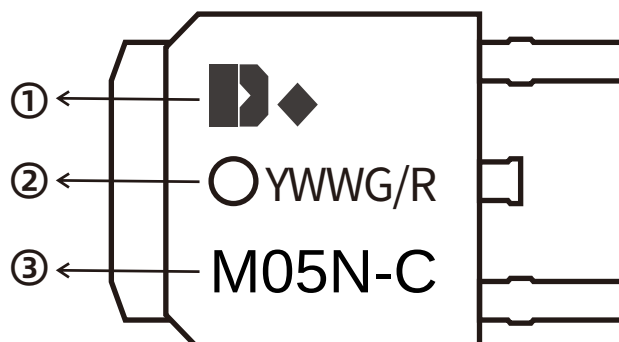
②. Date Code(YWWG / R)

Y : Year Code , last digit of the year

WW : Week Code(01-53)

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

③. Part NO.



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