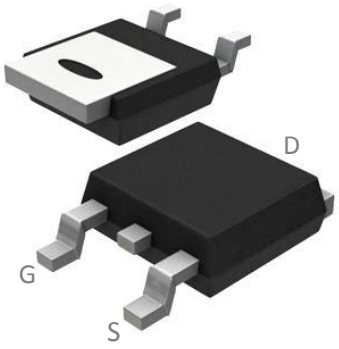
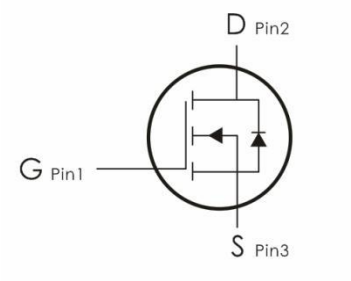
Description：

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}=40V,I_D=60A,$R_{DS(ON)}$<6.5mΩ @V_{GS}=10V
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
DOD60N04	60N04	TO- 252	2500 pcs/Reel

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

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	40	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Continuous Drain Current-T_C=25℃	60	A
	Continuous Drain Current-Tc=100℃	39	A
I_{DM}	Pulse Drain Current Tested [1]	240	A
E_{AS}	Single Pulsed Avalanche Energy [2]	81	mJ
P_D	Power Dissipation T_C = 25℃	47	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[1]	3.2	℃/W

Electrical Characteristics: (Tc=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	40	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=40V, V_{GS}=0V	---	---	1.0	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V, V_{DS}=0A	---	---	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate-Source Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	1.0	1.7	2.5	V
$R_{DS(ON)}$	Drain-Source On Resistanc[2]	V_{GS}=10V,I_D=30A	---	5.6	6.5	mΩ
		V_{GS}=4.5V,I_D=20A	---	7.6	9	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=20V, V_{GS}=0V, f=1MHz	---	2380	---	pF
C_{oss}	Output Capacitance		---	188	---	
C_{rss}	Reverse Transfer Capacitance		---	160	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DS}=20V , V_{GS}=10V , RG=3Ω , I_D=30A	---	10	---	ns
t_r	Rise Time		---	10	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	35	---	ns
t_f	Fall Time		---	7	---	ns
Q_g	Total Gate Charge	V_{GS}=10V, V_{DS}=20V, I_D=30A	---	35	---	nC
Q_{gs}	Gate-Source Charge		---	5	---	nC
Q_{gd}	Gate-Drain “Miller” Charge		---	6	---	nC
Drain-Source Diode Characteristics						
I_S	Continuous Source Current[1, 4]	V_D=V_G=0V	---	---	60	A
I_{SM}	Pulsed Source Current[2, 4]	V_D=V_G=0V	---	---	240	A
V_{SD}	Diode Forward Voltage[2]	V_{GS}=0V , Is=30A	---	---	1.2	V
Trr	Reverse Recovery Time	IF=20A , dI/dt=100A/μs , T_J=25℃	---	22	---	ns
Qrr	Reverse Recovery Charge		---	11	---	nC

Notes:

1.Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2.EAS condition: TJ=25℃, VDD=20V, VG=10V, RG=25Ω， L=0.5mH, IAS=18A

3.Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

Typical Characteristics：

(T_C=25℃ unless otherwise noted)

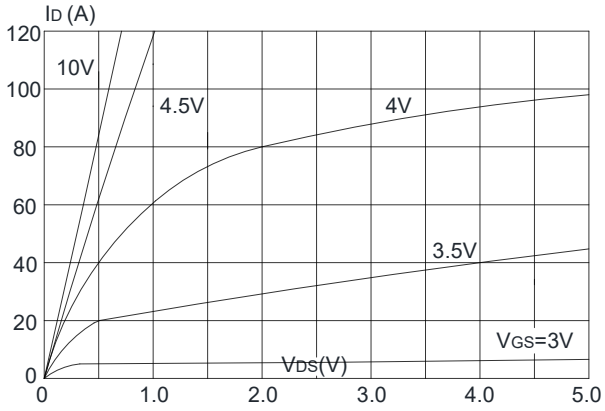


Figure1: Output Characteristics

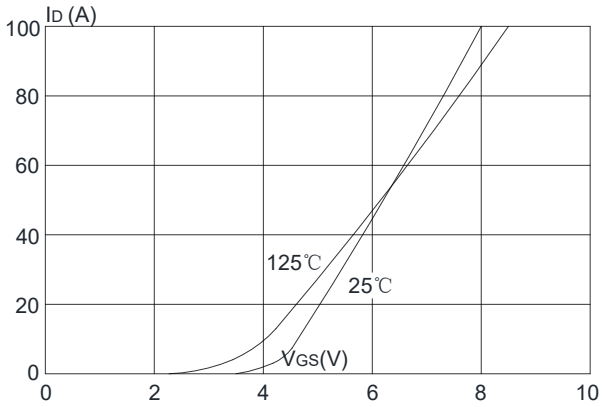


Figure 2: Typical Transfer Characteristics

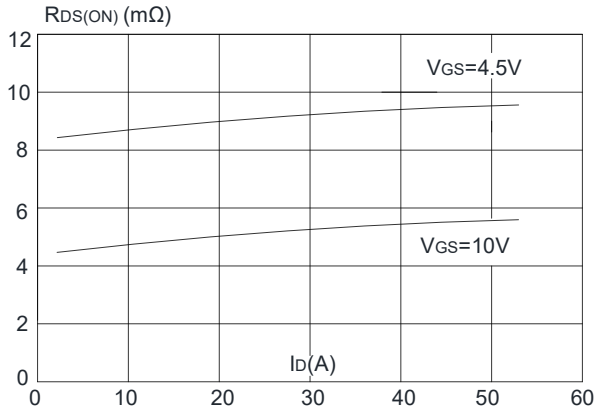


Figure 3: On-resistance vs. Drain Current

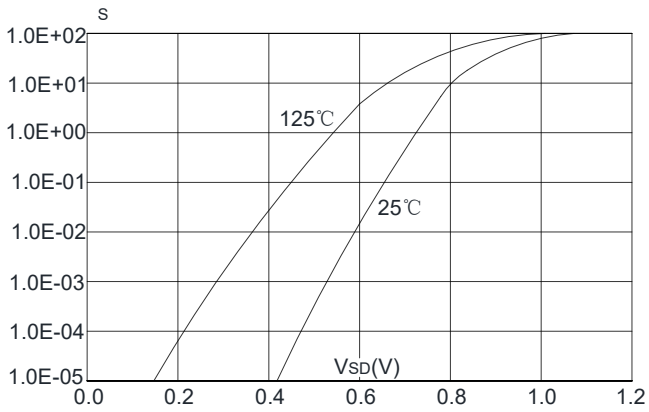


Figure 4: Body Diode Characteristics

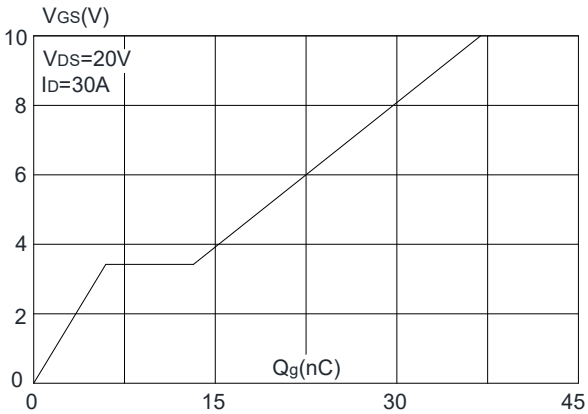


Figure 5: Gate Charge Characteristics

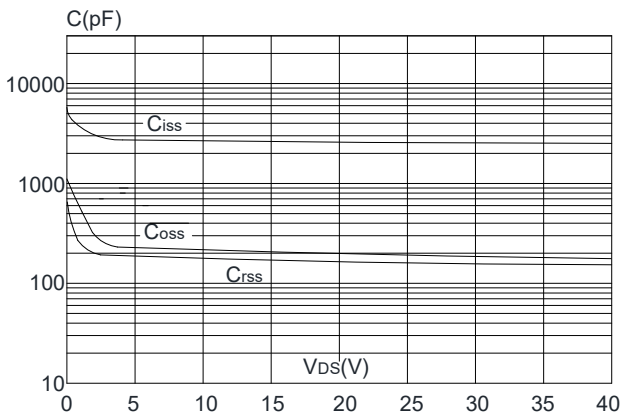


Figure 6: Capacitance Characteristics

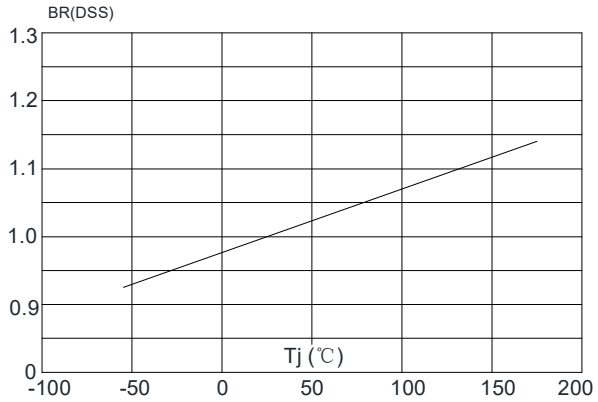


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

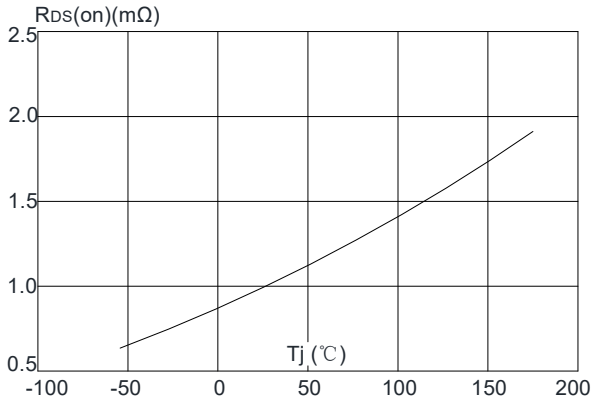


Figure 8: Normalized on Resistance vs. Junction Temperature

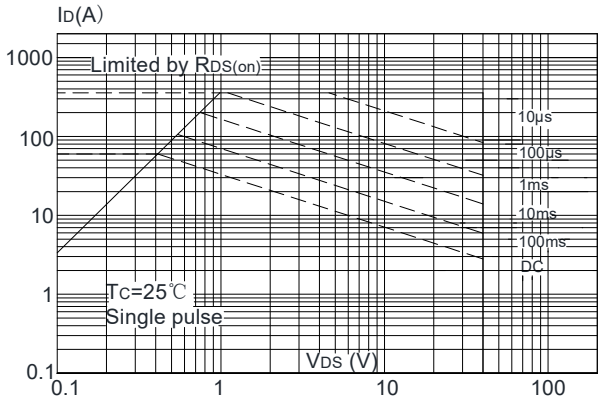


Figure 9: Maximum Safe Operating Area

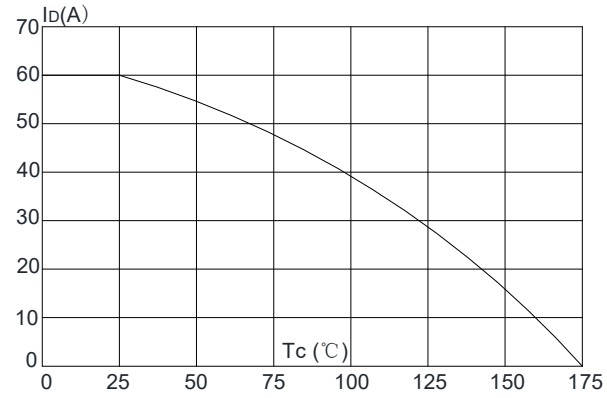


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

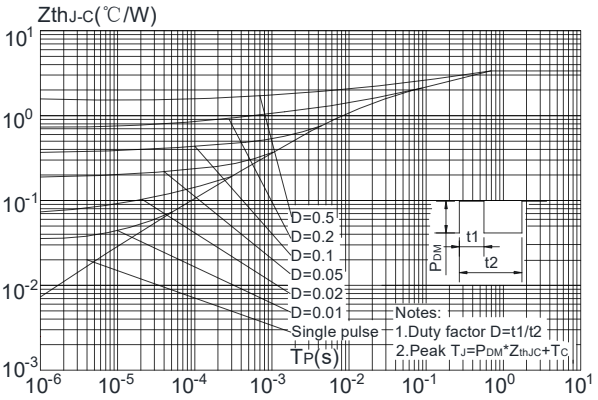
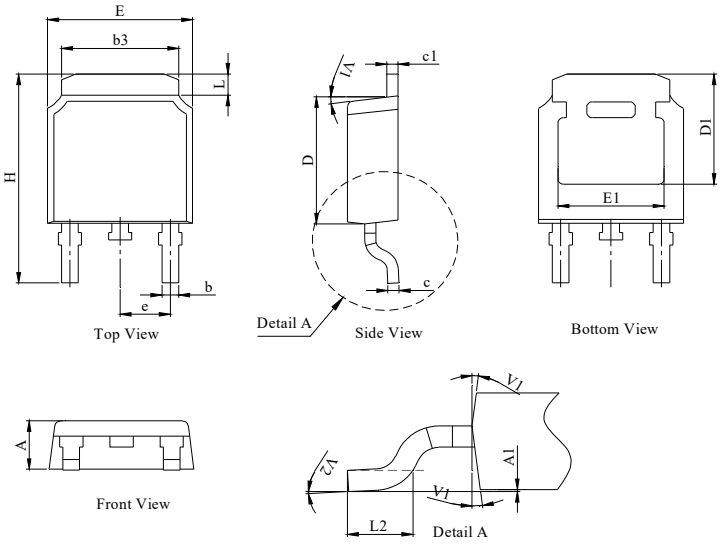


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

TO-252 Package Information

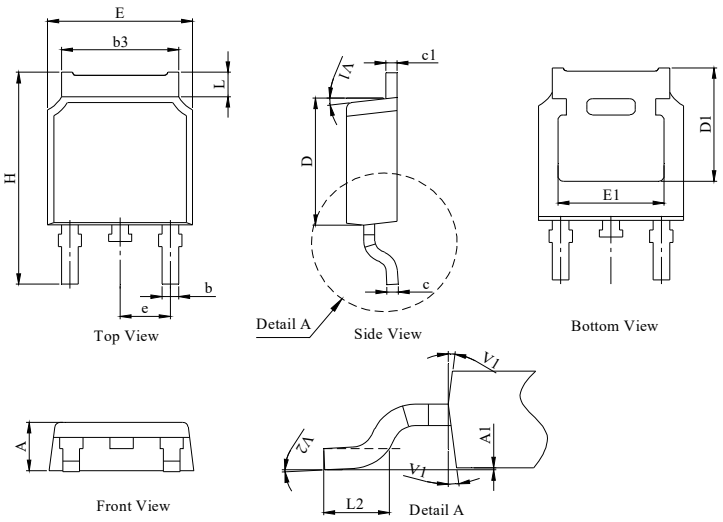
Package Outline Type-A

UNIT: mm



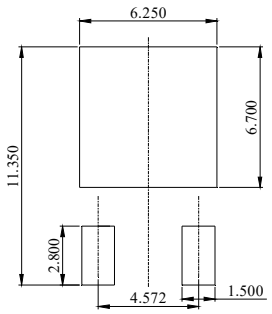
DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	2.18	2.30	2.39
A1	0	--	0.13
b	0.64	0.76	0.89
c	0.40	0.50	0.61
c1	0.46	0.50	0.58
D	5.97	6.10	6.23
D1	5.05	--	--
E	6.35	6.60	6.73
E1	4.32	--	--
b3	5.21	5.38	5.55
e	2.29 BSC		
H	9.40	10.00	10.40
L	0.89	--	1.27
L2	1.40	--	1.78
V1	7° REF		
V2	0°	--	6°

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



Marking Information：

①. Doingter LOGO

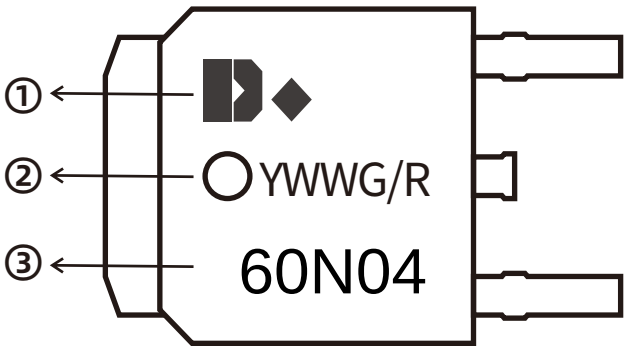
②. Date Code(YWWG / R)

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	2024-07-25	Release of final version

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