

Description:

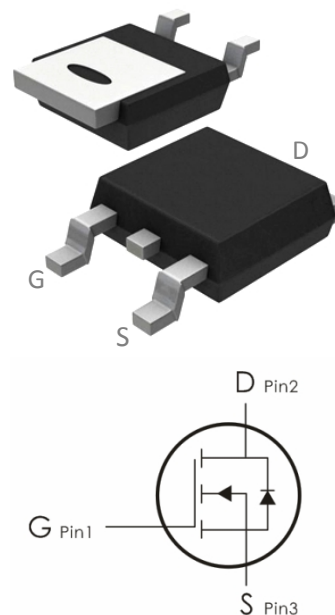
This N-Channel MOSFET uses advanced SGT technology and

design to provide excellent $R_{DS(on)}$ with low gate charge.

It can be used in a wide variety of applications.

Features:

- 1) $V_{DS}=100V, I_D=25A, R_{DS(on)} < 25m\Omega @ V_{GS}=10V$
- 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
DOD25N10	25N10	TO- 252	2500 pcs/Reel

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

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current ¹ - $T_C=25^\circ C$	25	A
E_{AS}	Single Pulse Avalanche Energy ⁵	8	mJ
I_{DM}	Pulsed Drain Current ² - $T_C=25^\circ C$	84	A
I_S	Continuous diode forward current ¹ - $T_C=25^\circ C$	25	A
I_{SM}	Diode pulsed current ² - $T_C=25^\circ C$	84	A
P_D	Power Dissipation ³ - $T_C=25^\circ C$	27	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	4.63	$^\circ C/W$

R_{θJA}	Thermal resistance, junction-ambient ⁴	62	°C/W
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Electrical Characteristics: (T_J=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	100	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =100V	---	---	1	μ A
I _{GSS}	Gate-Source Leakage Current	V _{GS} = ± 20V	---	---	± 100	nA
On Characteristics						
V _{GS(th)}	GATE-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =250 μ A	1	---	2.5	V
R _{DS(ON)}	Drain-Source On Resistance	V _{GS} =10V, I _D =10A	---	20	25	m Ω
		V _{GS} =4.5V, I _D =10A	---	25	30	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1MHz	---	680	---	pF
C _{oss}	Output Capacitance		---	371	---	
C _{rss}	Reverse Transfer Capacitance		---	25	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{GS} =10V ,V _{DS} =50V, R _G =2Ω, I _D =20A	---	16.8	---	ns
t _r	Rise Time		---	3.2	---	ns
t _{d(off)}	Turn-Off Delay Time		---	25.4	---	ns
t _f	Fall Time		---	2	---	ns
Q _g	Total Gate Charge	V _{GS} =10V, V _{DS} =50V, I _D =20A	---	11	---	nC
Q _{gs}	Gate-Source Charge		---	1.8	---	nC
Q _{gd}	Gate-Drain “Miller” Charge		---	2.4	---	nC
Drain-Source Diode Characteristics						

V_{SD}	Source-Drain Diode Forward Voltage	$V_{GS}=0V, I_S=20A$	---	---	1.3	V
trr	Body Diode Revrse Recovery Time	$I_S=20A, V_R=50V$ $dI/dt=100A/\mu s$	---	41.6	---	ns
Qrr	Body Diode Revrse Recovery Charge		---	54.6	---	nc

Notes:

1. Calculated continuous current based on maximum allowable junction temperature.
2. Repetitive rating; pulse width limited by max. junction temperature.
3. Pd is based on max. junction temperature, using junction-case thermal resistance.
4. The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with $T_a=25^\circ C$.
5. $V_{DD}=30V, V_{GS}=10V, L=0.3mH$, starting $T_j=25^\circ C$.

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

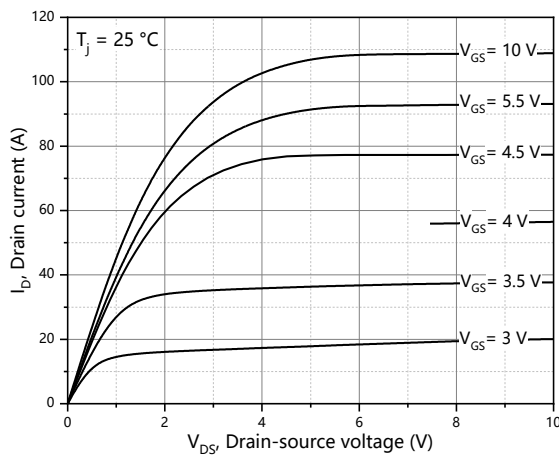


Figure 1. Typ. output characteristics

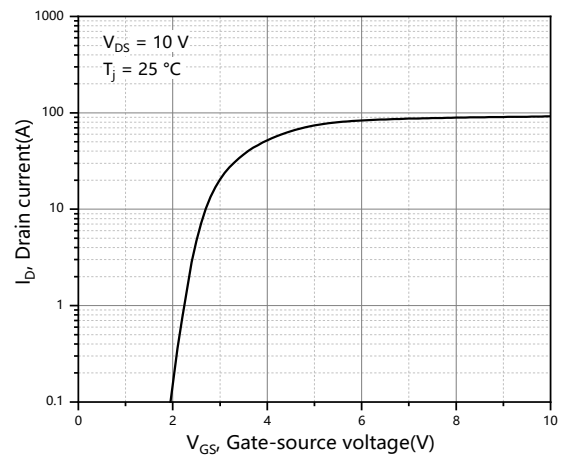


Figure 2. Typ. transfer characteristics

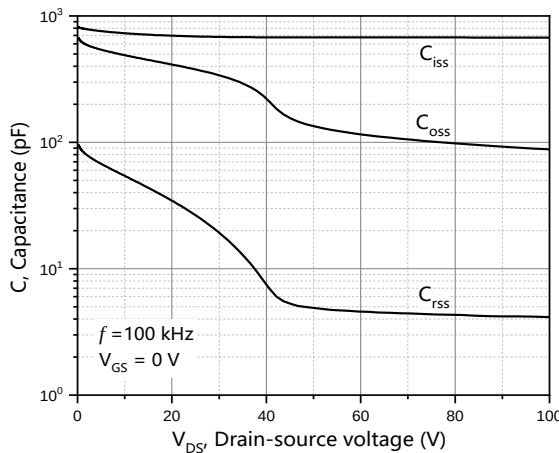


Figure 3. Typ. capacitances

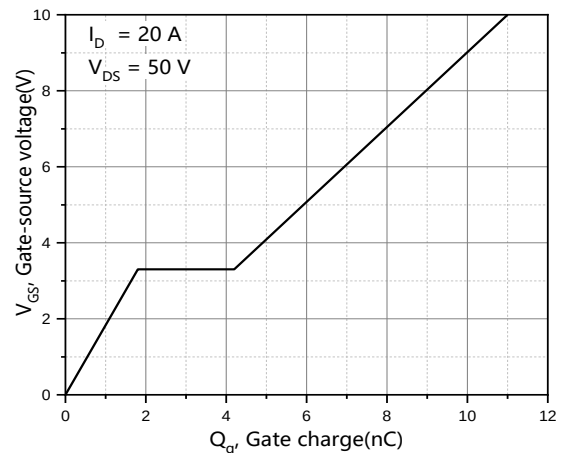


Figure 4. Typ. gate charge

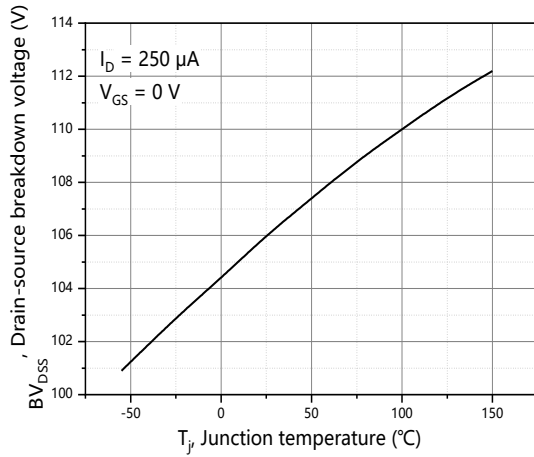


Figure 5. Drain-source breakdown voltage

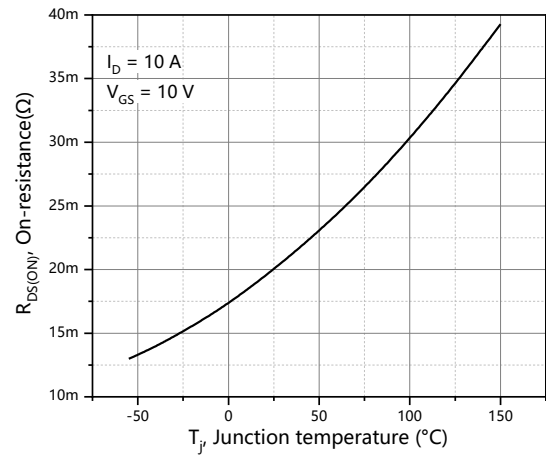


Figure 6. Drain-source on-state resistance

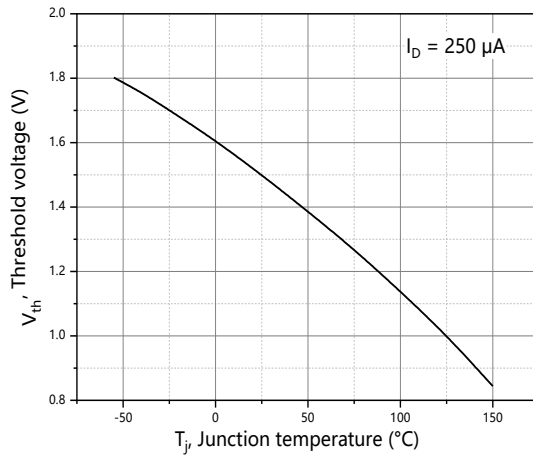


Figure 7. Threshold voltage

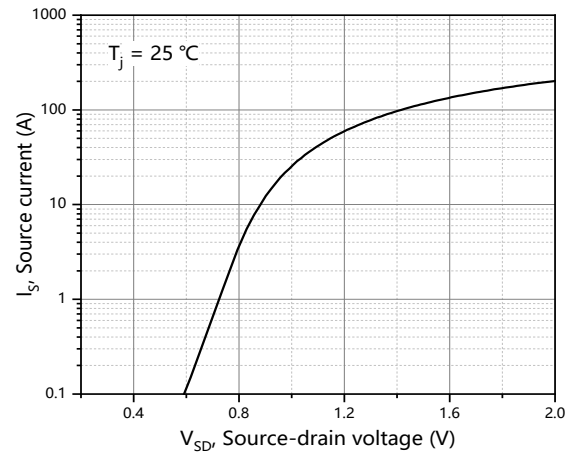


Figure 8. Forward characteristic of body diode

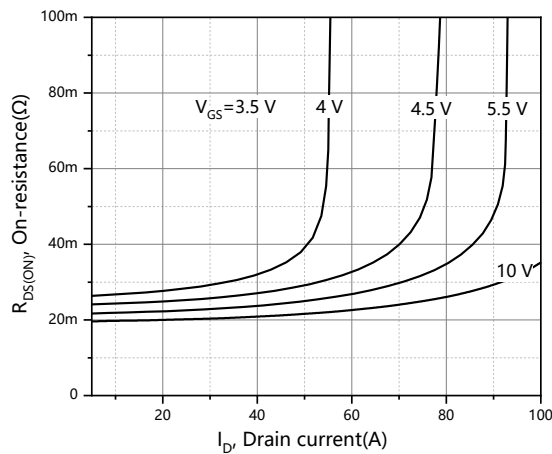


Figure 9. Drain-source on-state resistance

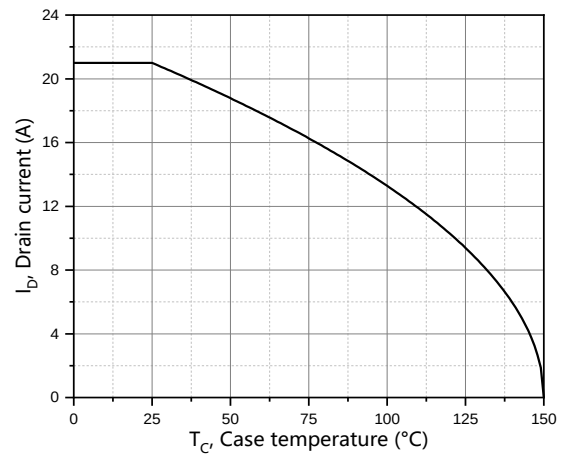


Figure 10. Drain current

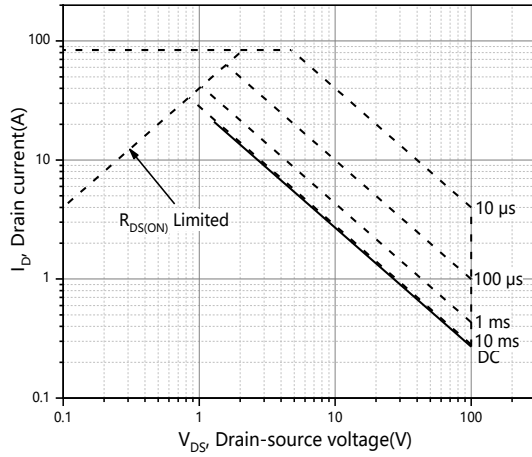


Figure 11. Safe operation area $T_C=25^\circ\text{C}$

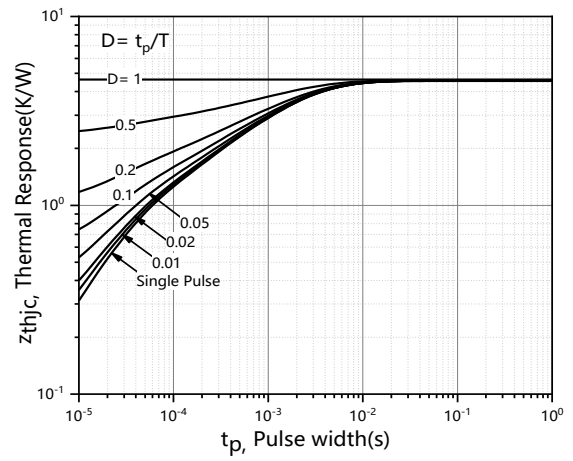
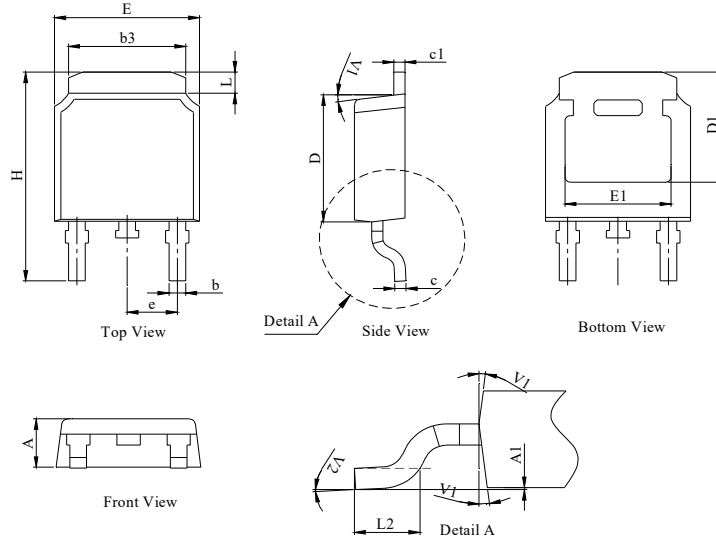


Figure 12. Max. transient thermal impedance

TO-252 Package Information

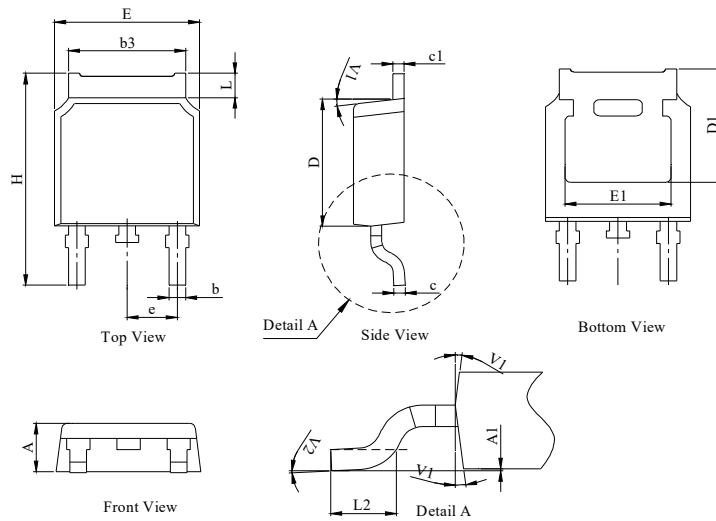
Package Outline Type-A

UNIT: mm



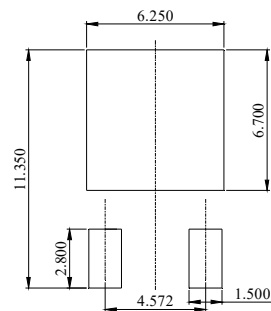
DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	2.18	2.30	2.39
A1	0	--	0.13
b	0.64	0.76	0.89
c	0.40	0.50	0.61
c1	0.46	0.50	0.58
D	5.97	6.10	6.23
D1	5.05	--	--
E	6.35	6.60	6.73
E1	4.32	--	--
b3	5.21	5.38	5.55
e	2.29 BSC		
H	9.40	10.00	10.40
L	0.89	--	1.27
L2	1.40	--	1.78
V1	7° REF		
V2	0°	--	6°

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

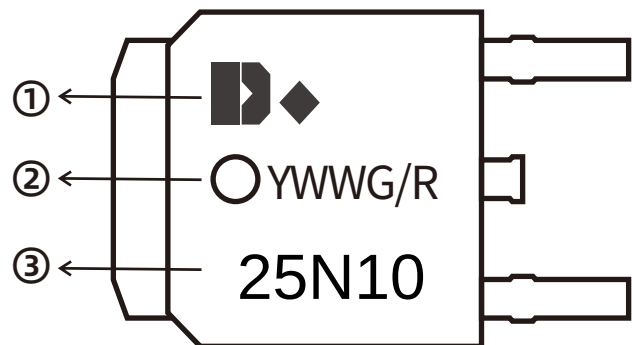
②. Date Code(YWWG / R)

Y : Year Code , last digit of the year

WW : Week Code(01-53)

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

③. Part NO.

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