

Description:

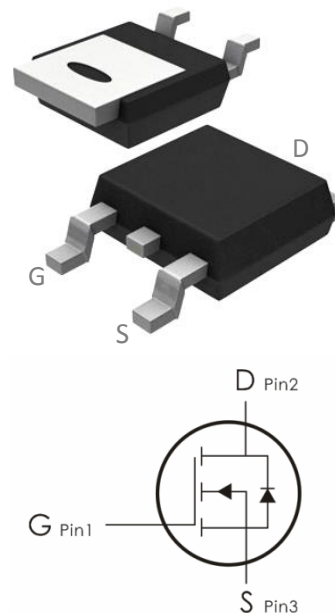
This N-Channel MOSFET uses advanced SGT technology and

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

It can be used in a wide variety of applications.

Features:

- 1) $V_{DS}=100V, I_D=15A, R_{DS(on)} < 70\text{ m}\Omega @ V_{GS}=10V$ (Typ : $55\text{m}\Omega$)
- 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
DOD15N10T	15N10T	TO- 252	2500 pcs/Reel

Absolute Maximum Ratings: ($T_C=25^\circ\text{C}$ 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- $T_C=25^\circ\text{C}$ ¹	15	A
	Pulsed Drain Current	45	
I_S	Continuous diode current ¹	15	
I_{SP}	Pulsed Drain Current ²	45	A
E_{AS}	Single Pulse Avalanche Energy ⁴	5.5	mJ
P_D	Power Dissipation	36	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ\text{C}$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	3.5	$^\circ\text{C}/\text{W}$

R_{θJA}	Thermal Resistance Junction to mbient	62	°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-Sourctce Breakdown Voltage	V _{GS} =0V, I _D =250 μ A	100	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =100 V	---	---	1	μ A
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 =250 μ A	1.2	---	2.5	V
R _{DS(ON)}	Drain-Source On Resistance	V _{GS} =10V, I _D =5 A	---	55	70	m Ω
		V _{GS} =4.5V, I _D =3A	---	70	100	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1MHz	---	310	---	pF
C _{OSS}	Output Capacitance		---	171	---	
C _{rss}	Reverse Transfer Capacitance		---	16.7	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DD} =50V , V _{GS} =10V , R _G =2 Ω , I _D =5A	---	14	---	ns
t _r	Rise Time		---	3.2	---	ns
t _{d(off)}	Turn-Off Delay Time		---	36	---	ns
t _f	Fall Time		---	14	---	ns
Q _g	Total Gate Charge	V _{GS} =10 V, V _{DS} =50V, I _D =5 A	---	6.5	---	nC
Q _{gs}	Gate-Source Charge		---	1.4	---	nC
Q _{gd}	Gate-Drain “Miller” Charge		---	1.4	---	nC
Drain-Source Diode Characteristics						

Symbol	Parameter	Conditions	Min	Typ	Max	Units
V_{SD}	Source-Drain Diode Forward Voltage	$V_{GS}=0V, I_S=7A$	---	---	1.3	V
t_{rr}	Continuous Source Current	$I_{SD} = 5A$	---	36	---	ns
q_{rr}	Pulsed Source Current	$dI_{SD}/dt = 100 A/\mu s$	---	37	---	nC

Note

- 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) $V_{DD}=50V$, $R_G=25\ \Omega$, $L=0.3\text{ mH}$, starting $T_j=25\ ^\circ\text{C}$.
- 5) 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 $T_a=25\ ^\circ\text{C}$.

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

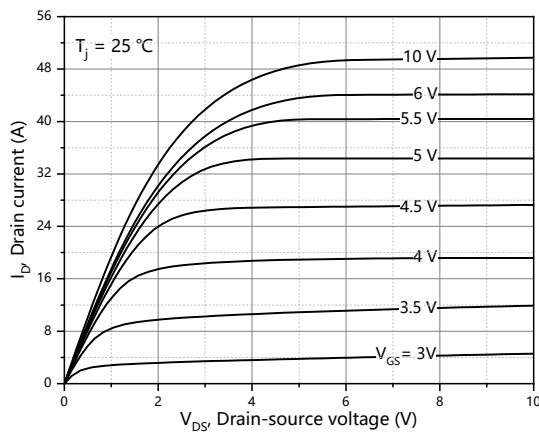


Figure 1, Typ. output characteristics

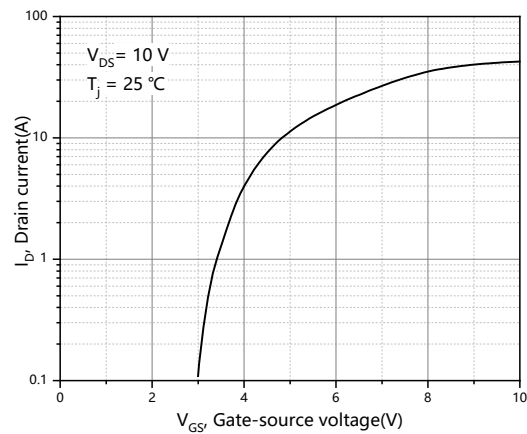


Figure 2 Typ. transfer characteristics

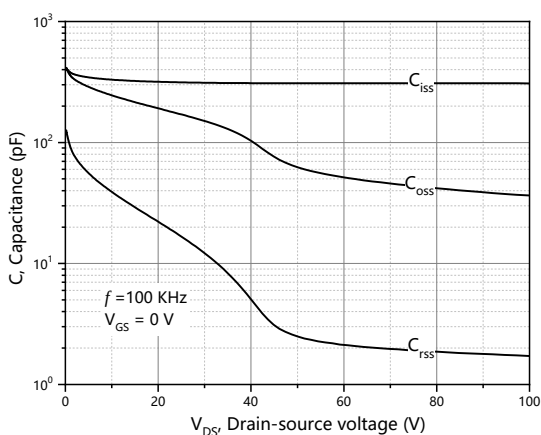


Figure 3, Typ. capacitances

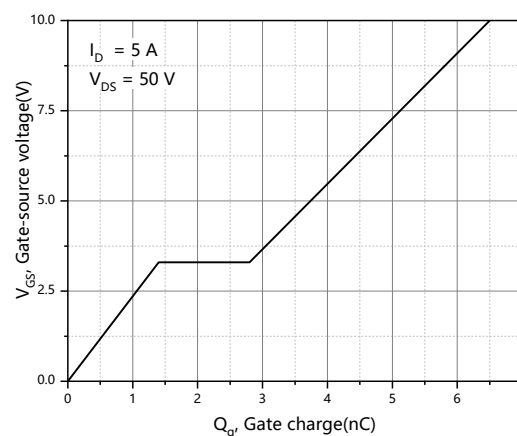


Figure 4, Typ. gate charge

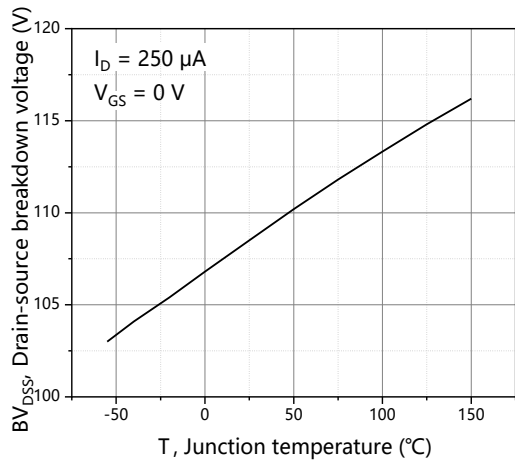


Figure 5, Drain-source breakdown voltage

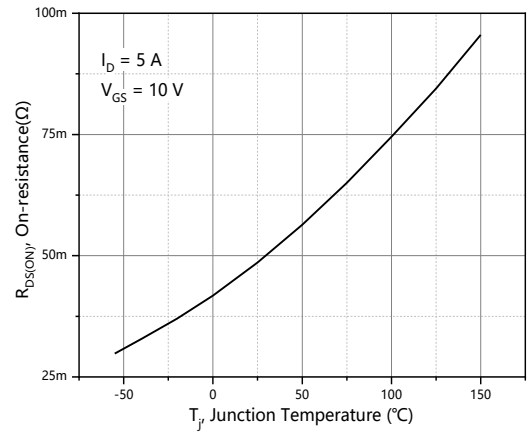


Figure 6, Drain-source on-state resistance

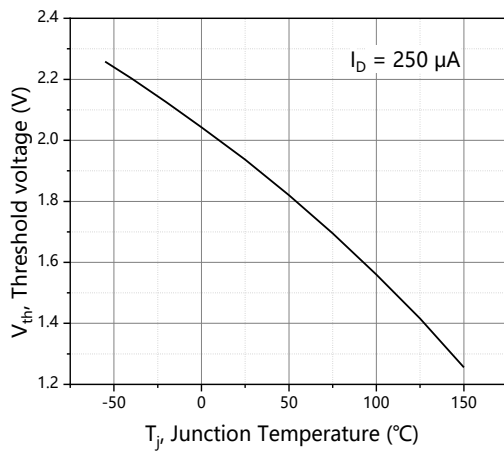


Figure 7, Threshold voltage

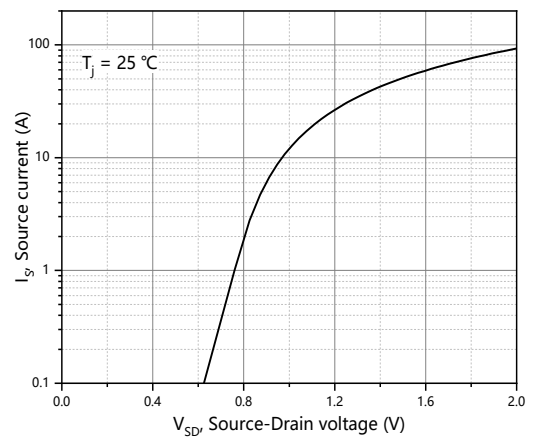


Figure 8, Forward characteristic of body diode

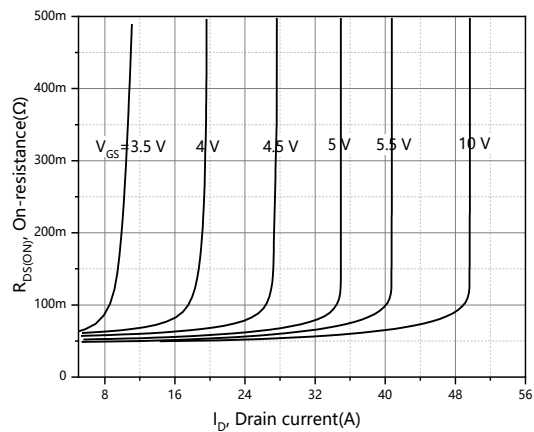


Figure 9, Drain source on state resistance

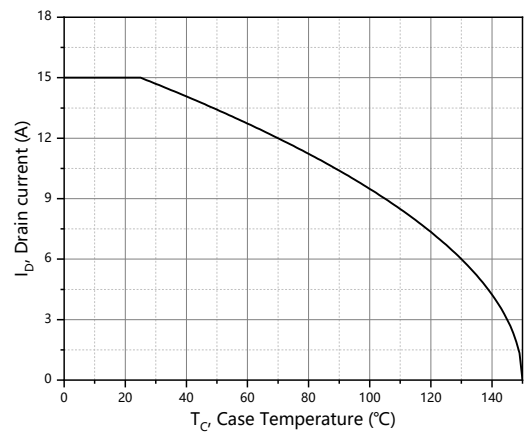


Figure 10, Drain current

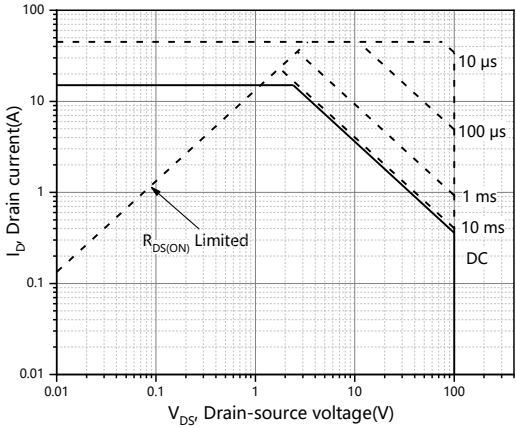


Figure 11, Safe operation area $T_C=25\text{ }^{\circ}\text{C}$

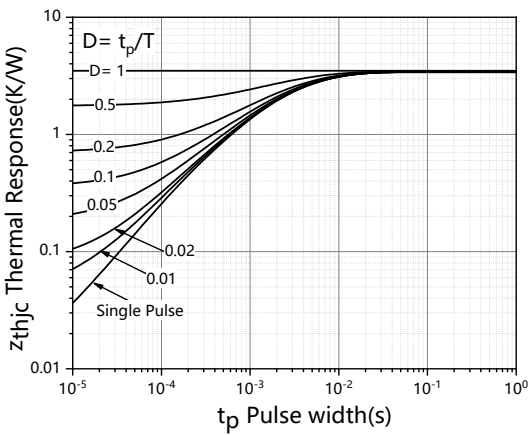
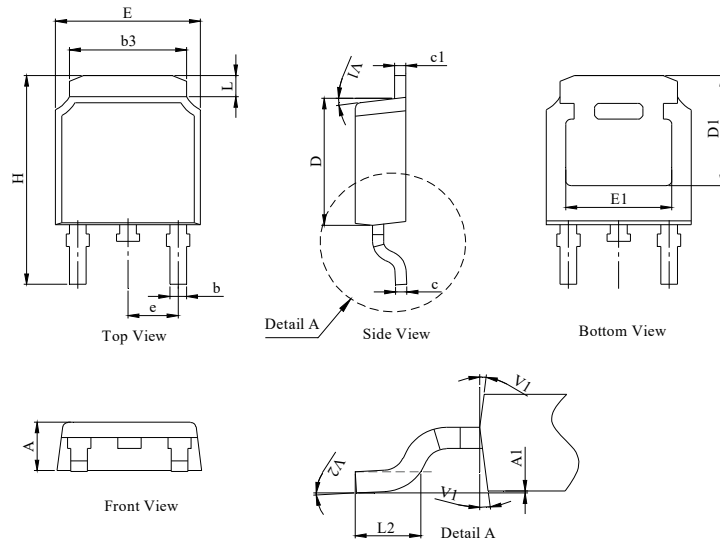


Figure 12, Max. transient thermal impedance

TO-252 Package Information

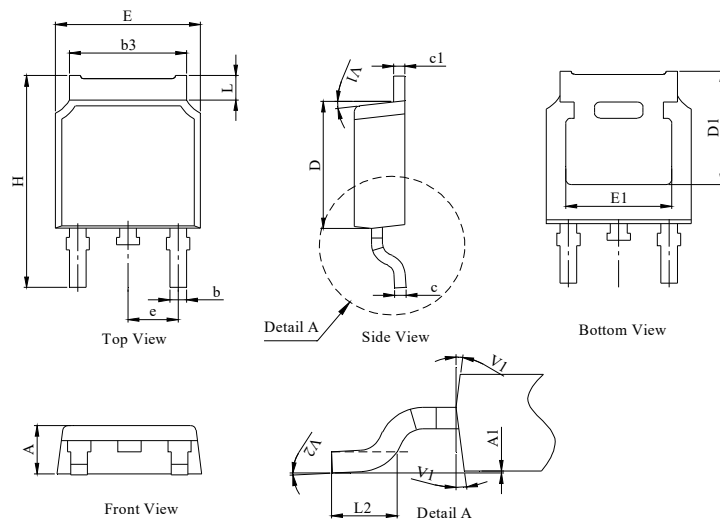
Package Outline Type-A

UNIT: mm



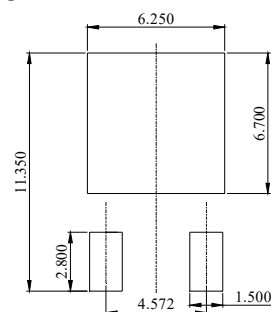
DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	2.18	2.30	2.39
A1	0	--	0.13
b	0.64	0.76	0.89
c	0.40	0.50	0.61
c1	0.46	0.50	0.58
D	5.97	6.10	6.23
D1	5.05	--	--
E	6.35	6.60	6.73
E1	4.32	--	--
b3	5.21	5.38	5.55
e	2.29 BSC		
H	9.40	10.00	10.40
L	0.89	--	1.27
L2	1.40	--	1.78
V1	7° REF		
V2	0°	--	6°

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	5.30 REF		
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

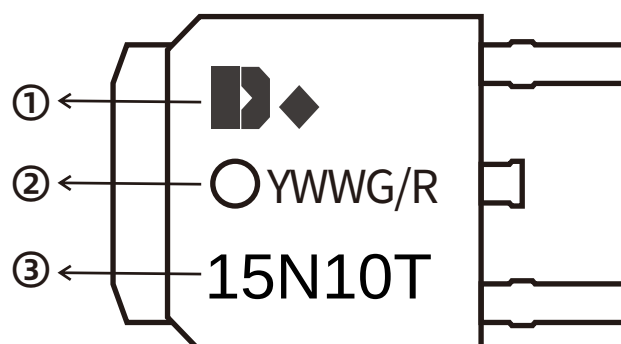
②. Date Code(YWWG / R)

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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