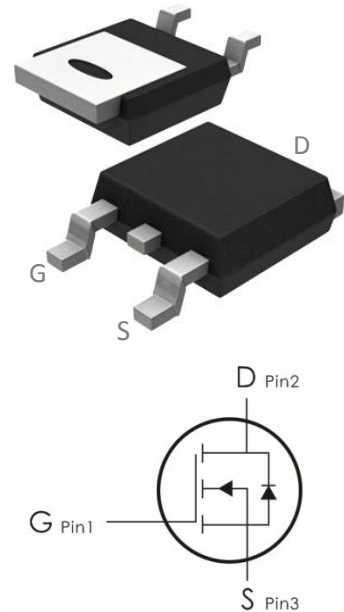


Description:

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) $V_{DS}=30V, I_D=135A, R_{DS(on)} < 2.5m\Omega @ V_{GS}=10V, Typ: 2.2m\Omega$
- 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
DOD135N03	135N03	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	30	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current- $T_C=25^\circ C$	135	A
	Continuous Drain Current- $T_C=100^\circ C$	73	
I_{DM}	Pulsed Drain Current(Note2)	240	
E_{AS}	Avalanche Energy, Single Pulse (Note 3)	160	mJ
P_D	Power Dissipation, $T_C=25^\circ C$	120	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ C$

Thermal Characteristics:

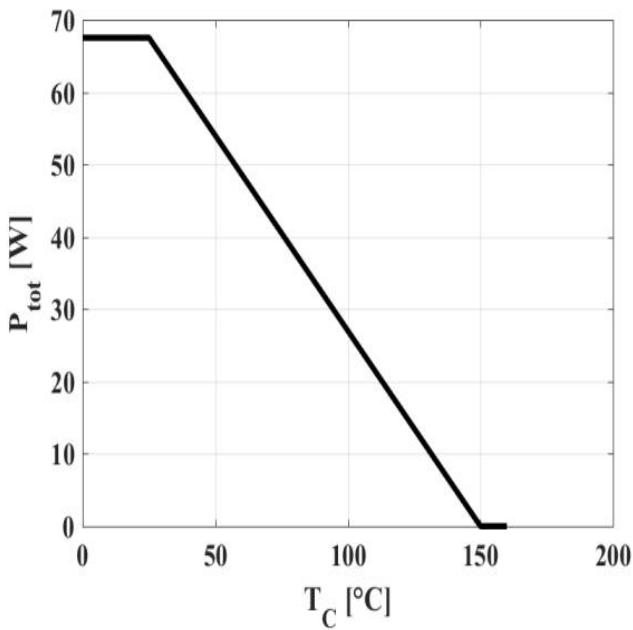
Symbol	Parameter	Max	Units
R_{thJC}	Thermal Resistance, Junction to Case	1.04	$^\circ C/W$

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 μ A	30	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =30V	---	---	1	μ A
I _{GSS}	Gate-Source Leakage Current	V _{GS} =± 20V, V _{DS} =0A	---	---	± 100	nA
On Characteristics						
V _{GS(TH)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =0.25mA	1.2	1.7	2.1	V
R _{DS(ON)}	Drain-Source On Resistance	V _{GS} =10V, I _D =20A	---	2.2	2.5	m Ω
		V _{GS} =4.5V, I _D =20A	---	3.1	3.5	m Ω
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1MHz	---	2.5	---	nF
C _{oss}	Output Capacitance		---	580	---	pF
C _{rss}	Reverse Transfer Capacitance		---	114	---	pF
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DD} =15V , V _{GS} =10V R _G =1.6 Ω , I _D =20A	---	11	---	ns
t _r	Rise Time		---	8	---	ns
t _{d(off)}	Turn-Off Delay Time		---	46	---	ns
t _f	Fall Time		---	8	---	ns
Q _g	Gate Charge Total	V _{GS} =0 to10V, V _{DD} =15V, I _D =20A	---	38.6	---	nC
Q _{gs}	Gate-Source Charge		---	5.3	---	nC
Q _{gd}	Gate-Drain Charge		---	5	---	nC
V _{plateau}	Gate Plateau Voltage		---	2.8	---	V
Drain-Source Diode Characteristics						
Symbol	Parameter	Conditions	Min	Typ	Max	Units
V _{SD}	Source-Drain Diode Forward Voltage	V _{GS} =0V, I _{SD} =20A	---	0.79	1.1	V
trr	Reverse Recovery Time	V _R =15V, I _F =20A	---	25	---	ns
qrr	Reverse Recovery Charge	dI _F /dt=100A/us	---	50	---	nC

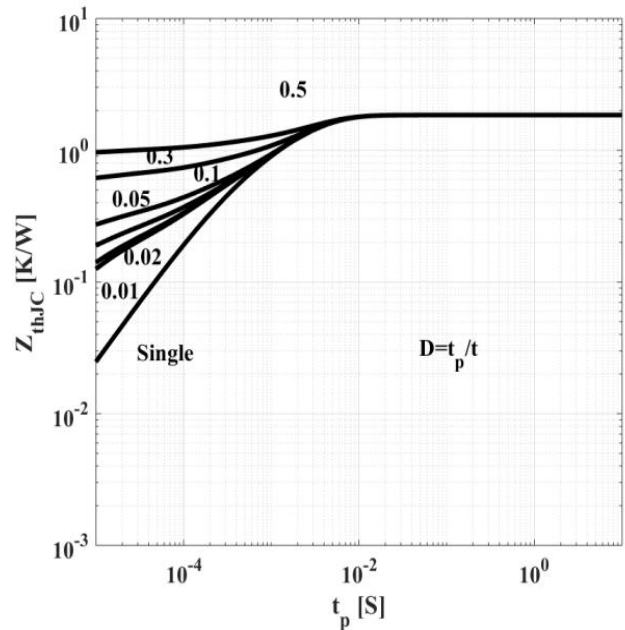
Notes:

1. Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.
2. Repetitive Rating: Pulse width limited by maximum junction temperature
3. $I_{AS} = 20.0A$, $V_{DD} = 15V$, $R_G = 25\Omega$, Starting $T_J = 25^\circ C$

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


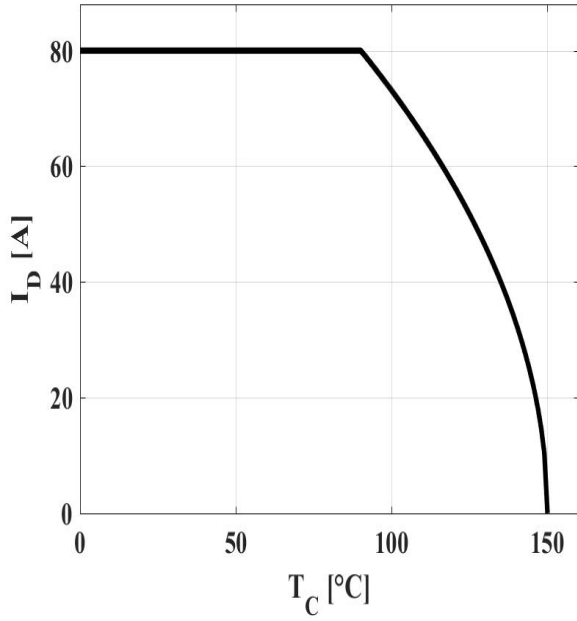
$$P_{tot} = f(T_C)$$

Figure 1: Power Dissipation



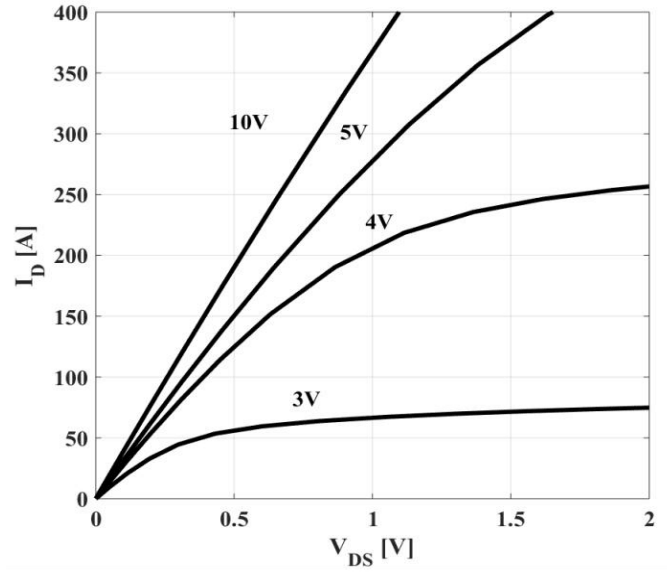
$$Z_{(thJC)} = f(t_p); \text{ parameter: } D = t_p / T$$

Figure 2: Max. Transient Thermal Impedance



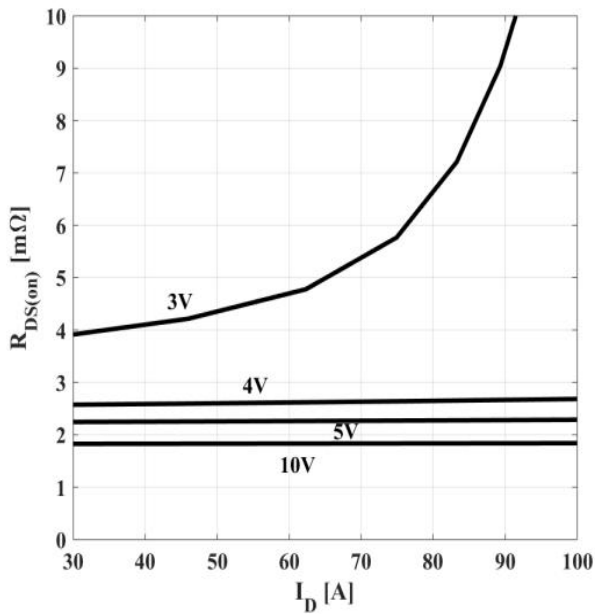
$$I_D = f(T_C); V_{GS} \geq 10V$$

Figure 3: Drain Current



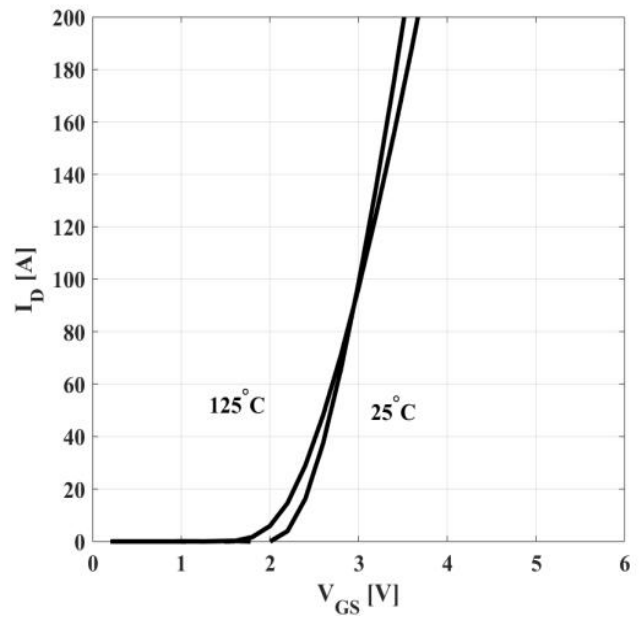
$$I_D = f(V_{DS}); T_j = 25^\circ C; \text{parameter: } V_{GS}$$

Figure 4: Typ. Output Characteristics



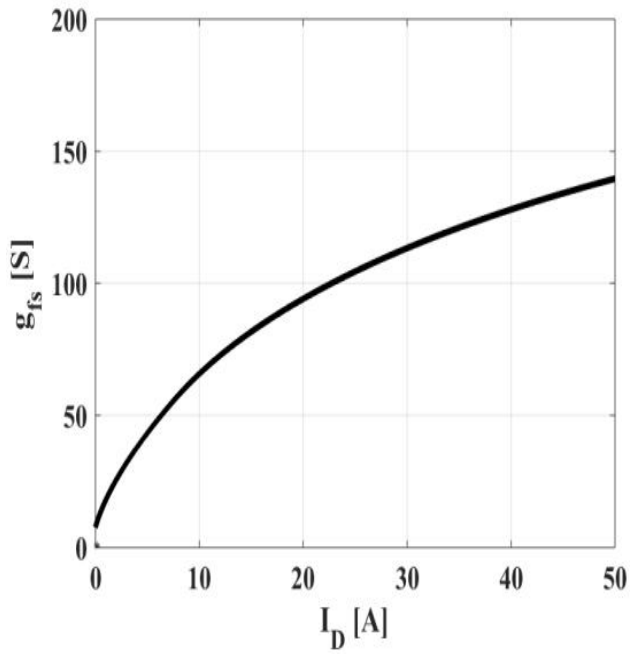
$$R_{DS(ON)} = f(I_D); T_j = 25^\circ C; \text{parameter: } V_{GS}$$

Figure 5: Typ. Drain-Source On-State Resistance



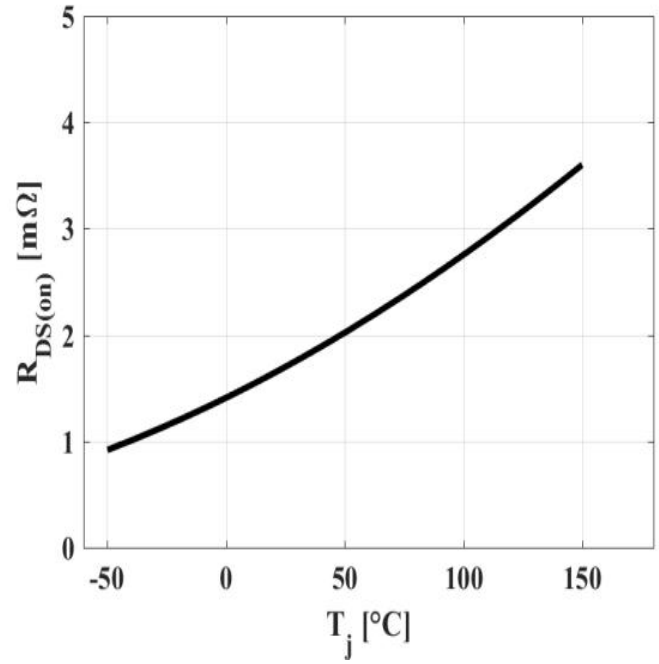
$$I_D = f(V_{GS}); |V_{DS}| > 2|I_D|R_{DS(ON)max}; \text{parameter: } T_j$$

Figure 6: Typ. Transfer Characteristics



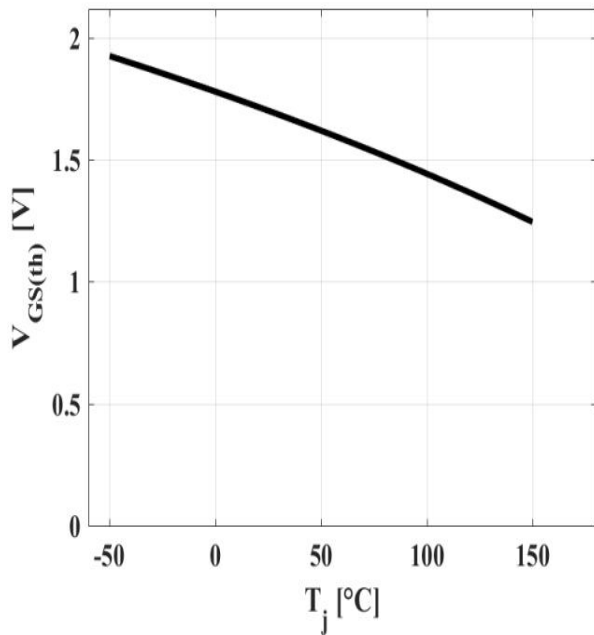
$$g_{fs}=f(I_D); T_j=25^{\circ}\text{C}$$

Figure 7: Typ. Forward Transconductance



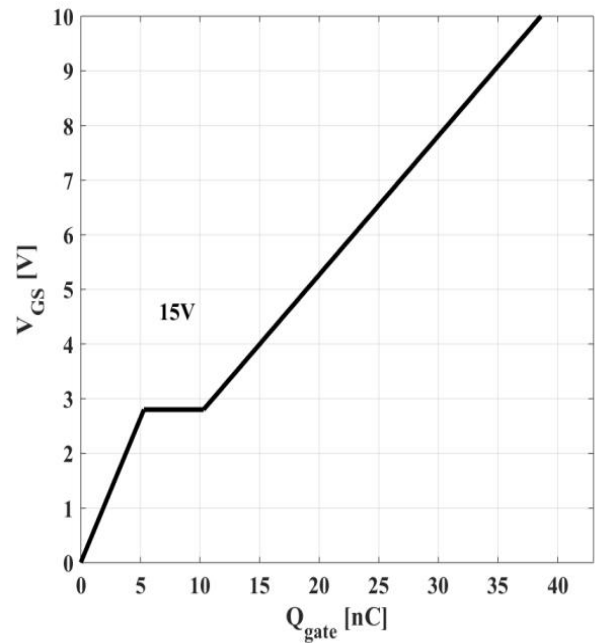
$$R_{DS(ON)}=f(T_j); I_D=20\text{A}; V_{GS}=10\text{V}$$

Figure 8 : Typ. Drain-Source On-State Resistance



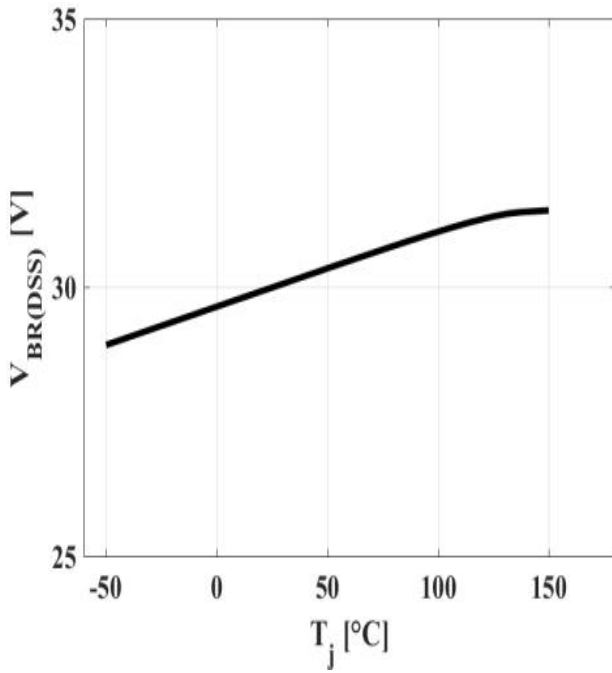
$$V_{GS(th)}=f(T_j); V_{GS}=V_{DS}; I_{DS}=250\mu\text{A}$$

Figure 9 : Typ. Gate Threshold Voltage



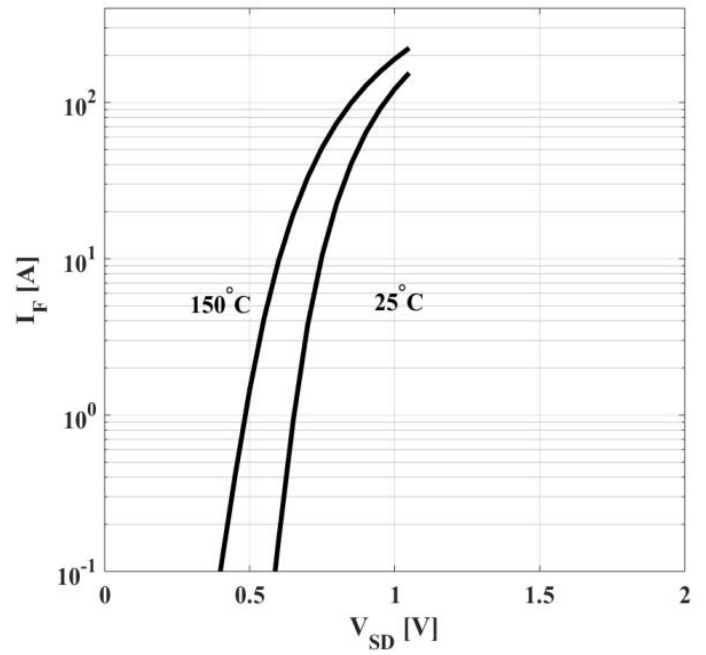
$$V_{GS}=f(Q_{gate}), I_D=20\text{A pulsed}$$

Figure 10: Typ. Gate Charge



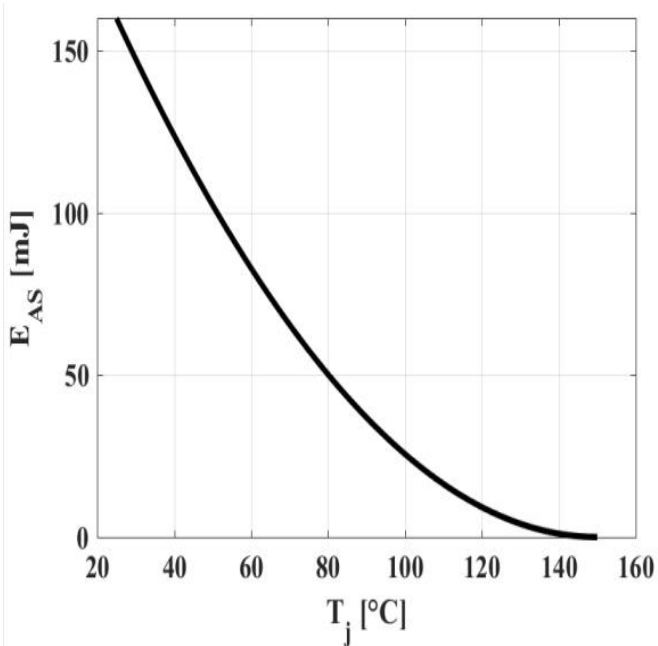
$$V_{BR(DSS)} = f(T_j); I_D = 1\text{mA}$$

Figure 11: Drain-Source Breakdown Voltage



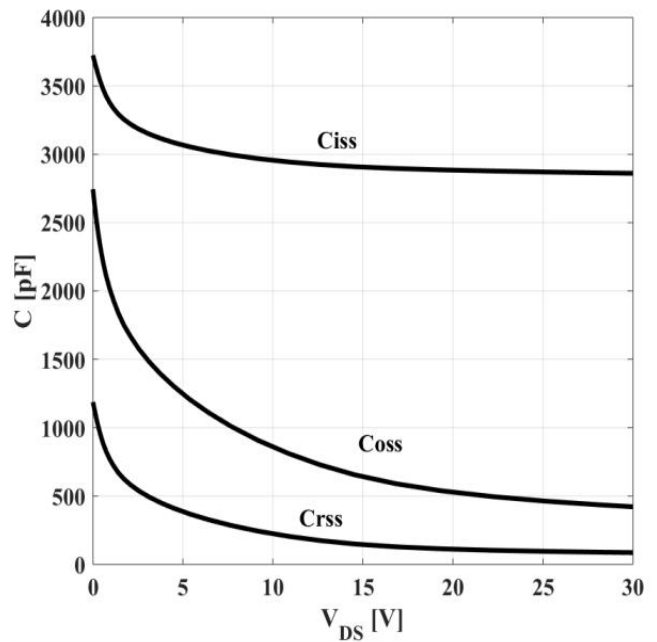
$$I_F = f(V_{SD}); \text{parameter: } T_j$$

Figure 12: Forward Characteristics of Reverse Diode



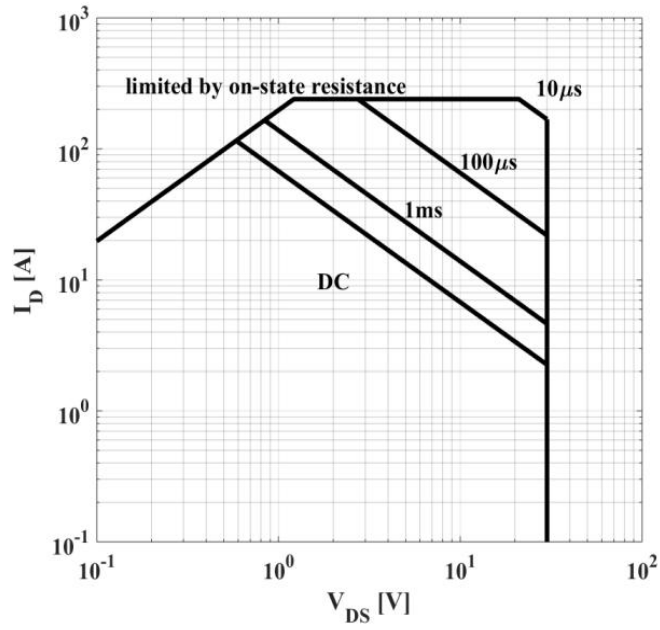
$$E_{AS} = f(T_j); I_D = 20.0\text{A}; V_{DD} = 15\text{V}$$

Figure 13: Avalanche Energy



$$C = f(V_{DS}); V_{GS} = 0; f = 1\text{MHz}$$

Figure 14: Typ. Capacitances



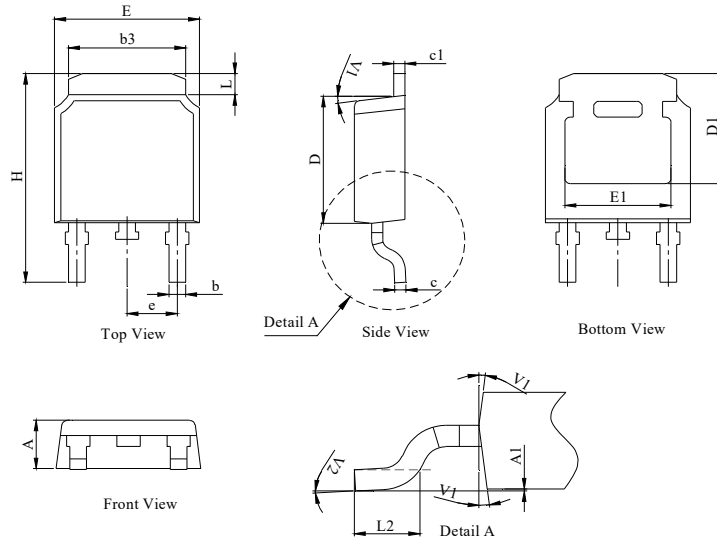
$I_D = f(V_{DS})$; $T_C = 25^\circ\text{C}$; $V_{GS} > 7\text{V}$; parameter: t_p

Figure 15: Safe Operating Area

TO-252 Package Information

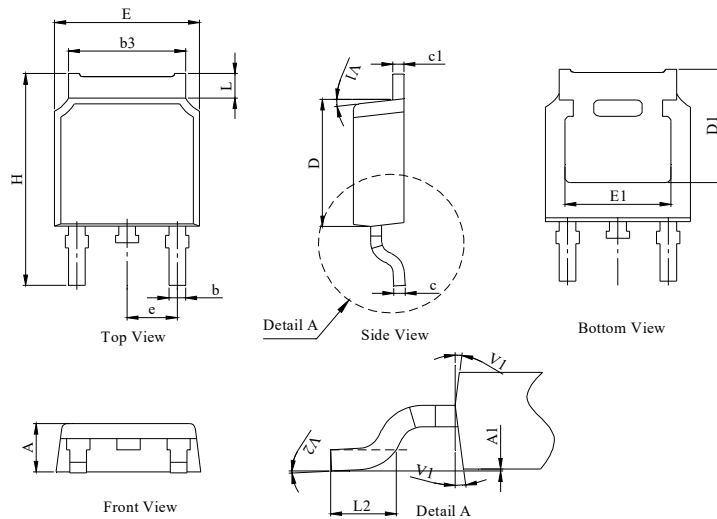
Package Outline Type-A

UNIT: mm



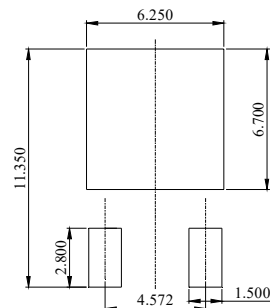
DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	2.18	2.30	2.39
A1	0	--	0.13
b	0.64	0.76	0.89
c	0.40	0.50	0.61
c1	0.46	0.50	0.58
D	5.97	6.10	6.23
D1	5.05	--	--
E	6.35	6.60	6.73
E1	4.32	--	--
b3	5.21	5.38	5.55
e	2.29 BSC		
H	9.40	10.00	10.40
L	0.89	--	1.27
L2	1.40	--	1.78
V1	7° REF		
V2	0°	--	6°

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

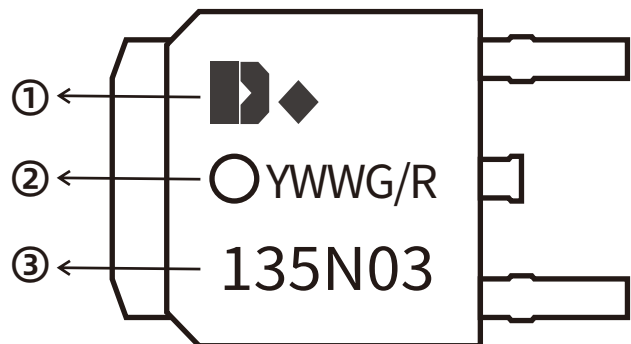
②. Date Code(YWWG / R)

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	2024-05-11	Release of final version

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