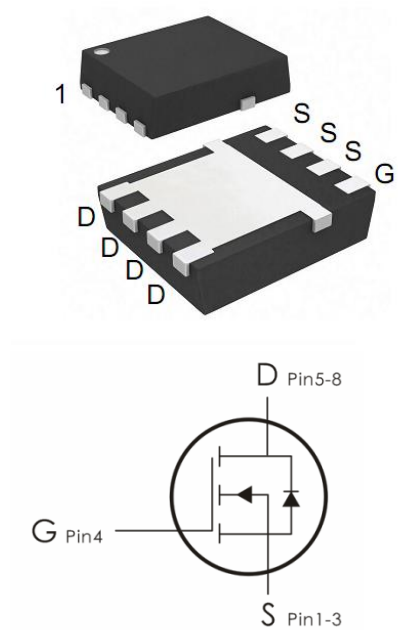


Description:

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) $V_{DS}=40V, I_D=100A, R_{DS(on)} < 3.5m\Omega @ V_{GS}=10V$
- 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.



Absolute Maximum Ratings: ($T_C=25^\circ\text{C}$ 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- $T_C=25^\circ\text{C}$	100	A
	Continuous Drain Current- $T_C=125^\circ\text{C}$	59	
I_{DM}	Pulsed Drain Current ²	240	
E_{AS}	Single Pulse Avalanche Energy ³	170	mJ
P_D	Power Dissipation	78	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	1.6	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	Thermal Resistance Junction to ambient	50	$^\circ\text{C}/\text{W}$

Package Marking and Ordering Information:

Part NO.	Marking	Package
DON100N04	100N04	DFN5*6-8

Electrical Characteristics: ($T_C=25^{\circ}\text{C}$ 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	40	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =40V	---	---	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	1.8	2.4	V
R _{DS(ON)}	Drain-Source On Resistance	V _{GS} =10V, I _D =35A	---	2.8	3.5	m Ω
		V _{GS} =4.5V, I _D =15A	---	3.8	5	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =20V, V _{GS} =0V, f=1MHz	---	2900	---	pF
C _{oss}	Output Capacitance		---	758	---	
C _{rss}	Reverse Transfer Capacitance		---	50	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DD} =20V , V _{GS} =10V , R _G =1.6 Ω , I _D =35A	---	9	---	ns
t _r	Rise Time		---	32	---	ns
t _{d(off)}	Turn-Off Delay Time		---	32	---	ns
t _f	Fall Time		---	7	---	ns
Q _g	Total Gate Charge	V _{GS} =10V, V _{DS} =20V, I _D =35A	---	6.1	---	nC
Q _{gs}	Gate-Source Charge		---	4.7	---	nC

Q_{gd}	Gate-Drain "Miller" Charge		---	40	---	nC
Drain-Source Diode Characteristics						
Symbol	Parameter	Conditions	Min	Typ	Max	Units
V_{SD}	Source-Drain Diode Forward Voltage ³	V _{GS} =0V, I _S =35A	---	0.84	---	V
trr	Continuous Source Current	V _R =20V, I _F =35A dI _F /dt=100A/us	---	52	---	ns
qrr	Pulsed Source Current		---	91	---	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}= 20V, R_G= 25 Ω, Starting T_J= 25°C

Typical Characteristics: (T_C=25°C unless otherwise noted)

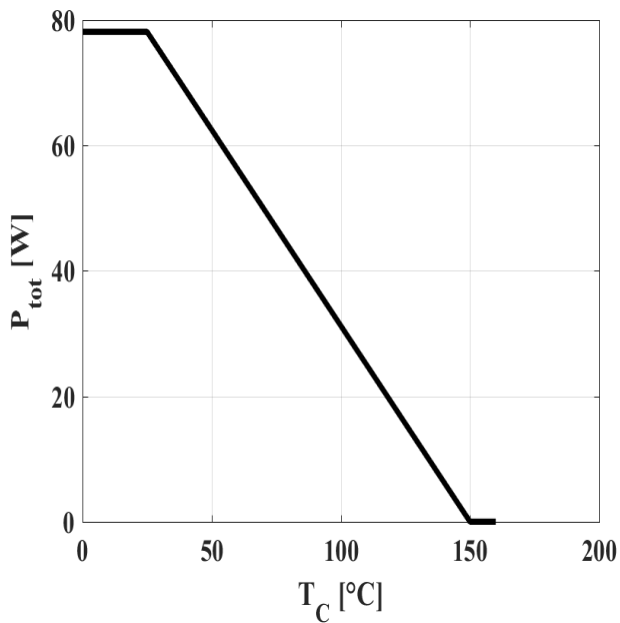


Figure 1: Power Dissipation

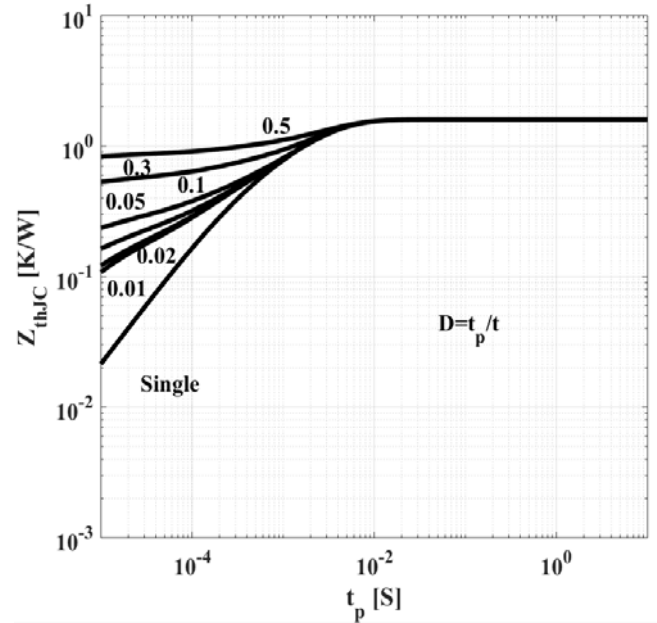


Figure 2: Max. Transient Thermal Impedance

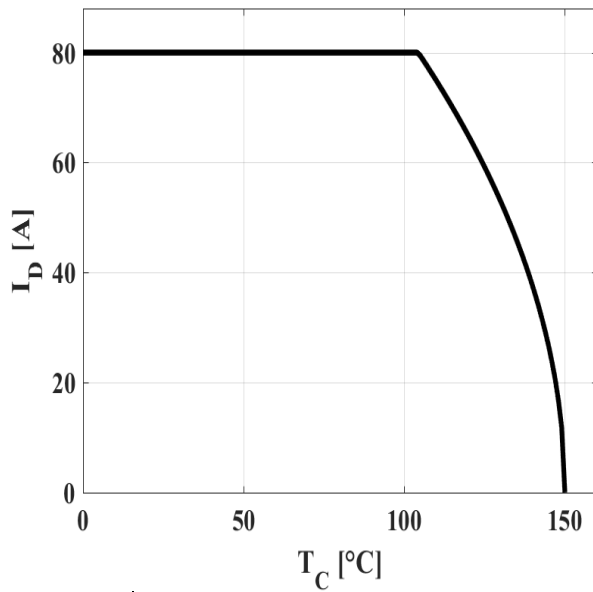


Figure3: Drain Current

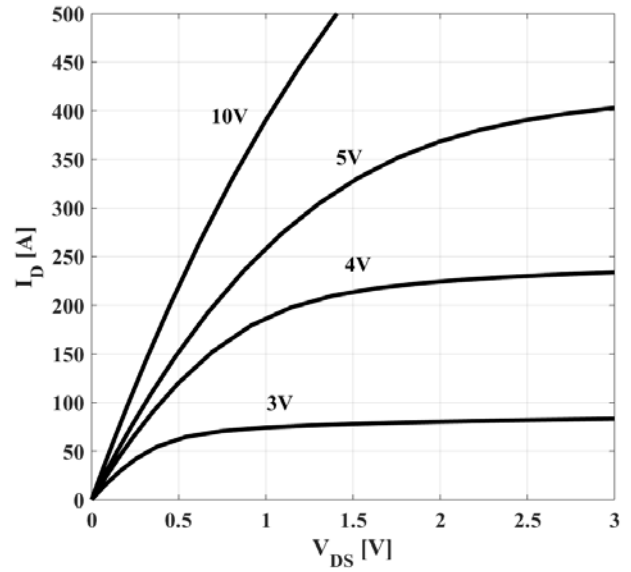


Figure4: Typ. Output Characteristics

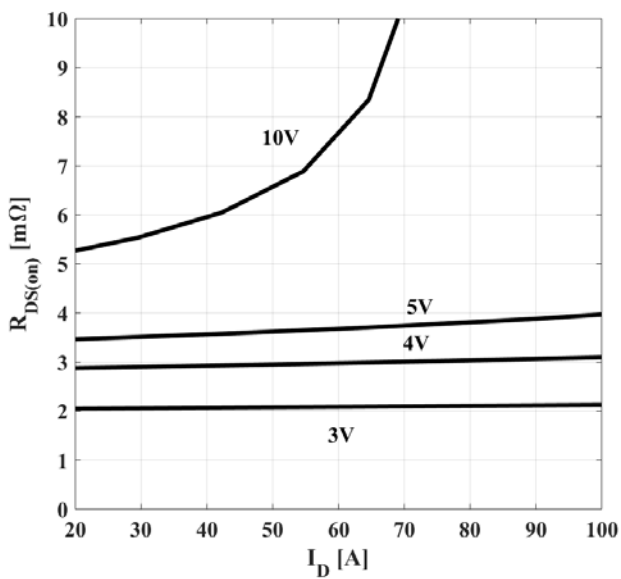


Figure5: Typ. Drain-Source On-State Resistance

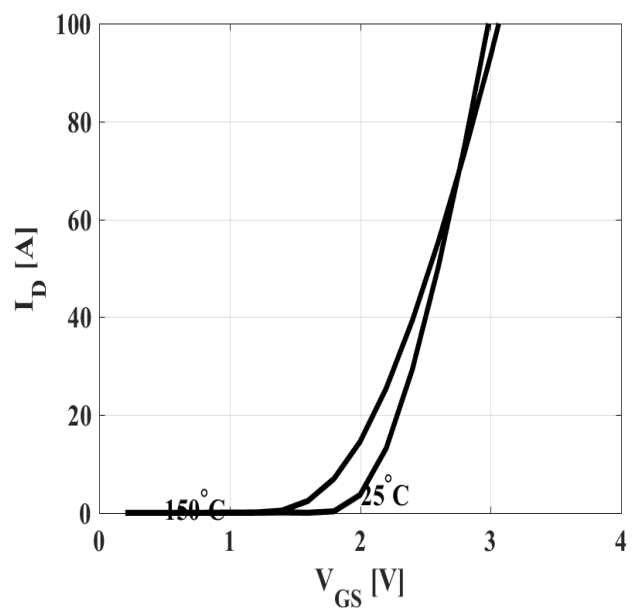


Figure6: Typ. Transfer Characteristics

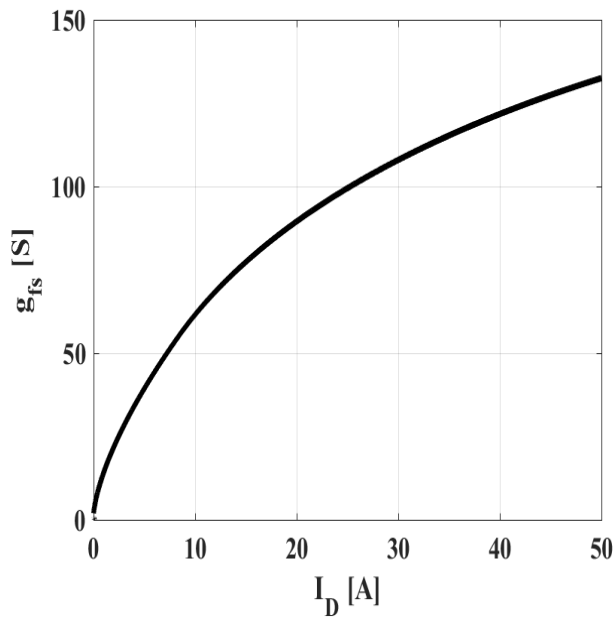


Figure7: Typ. Forward Transconductance

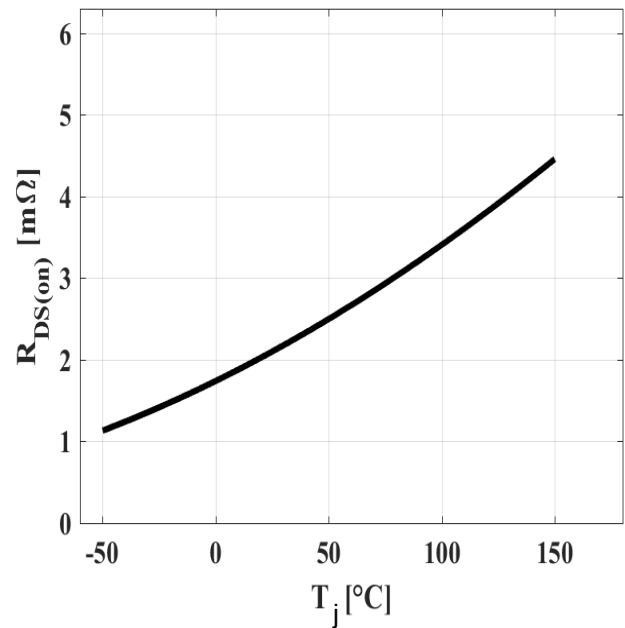


Figure8: Typ. Drain-Source On-State Resistance

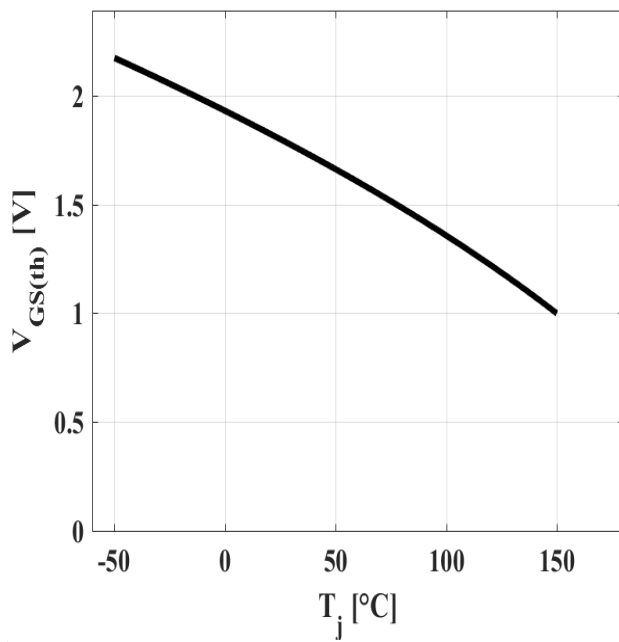


Figure9: Typ. Gate Threshold Voltage

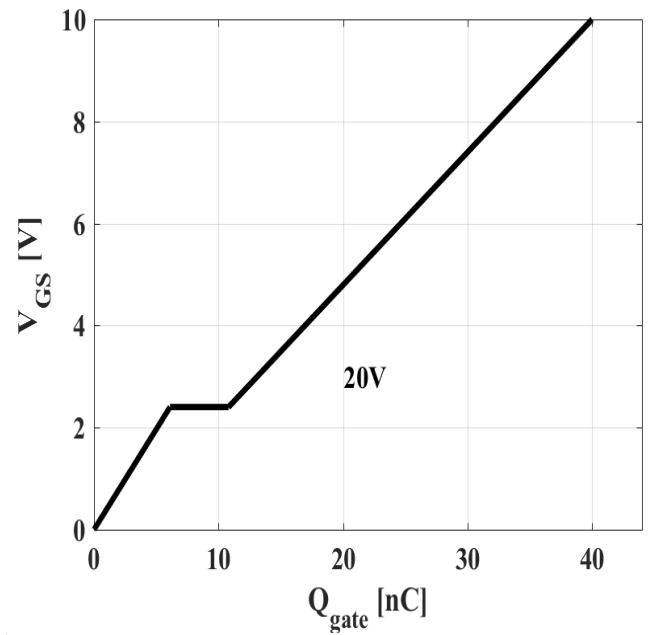


Figure 10: Typ. Gate Charge

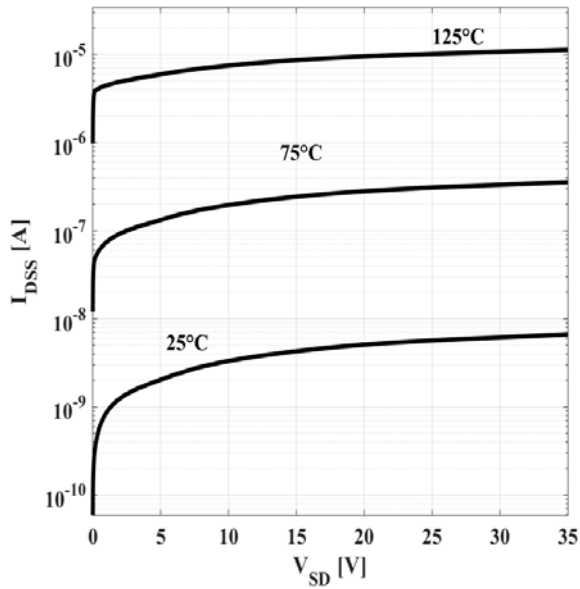


Figure 11: Drain-Source Leakage Current

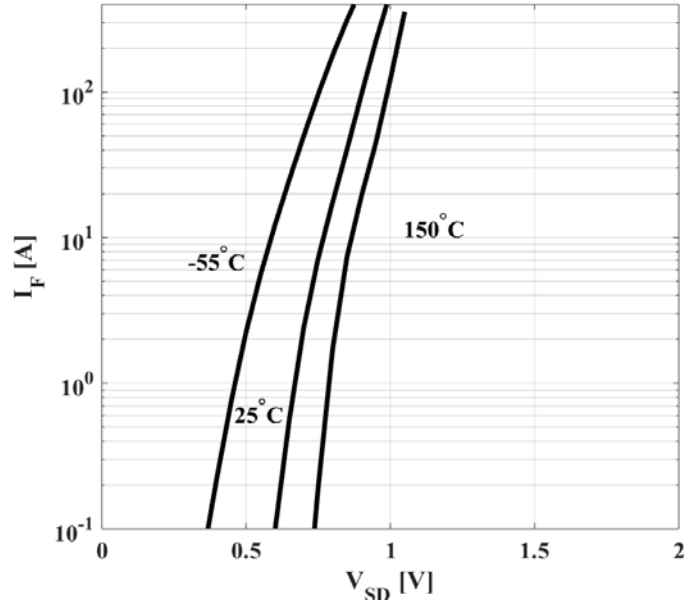


Figure 12: Forward Characteristics of Reverse Diode

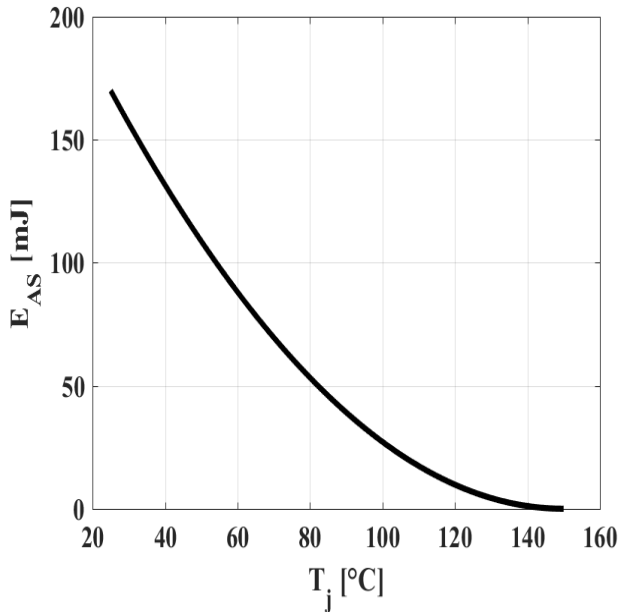


Figure 13: Avalanche Energy

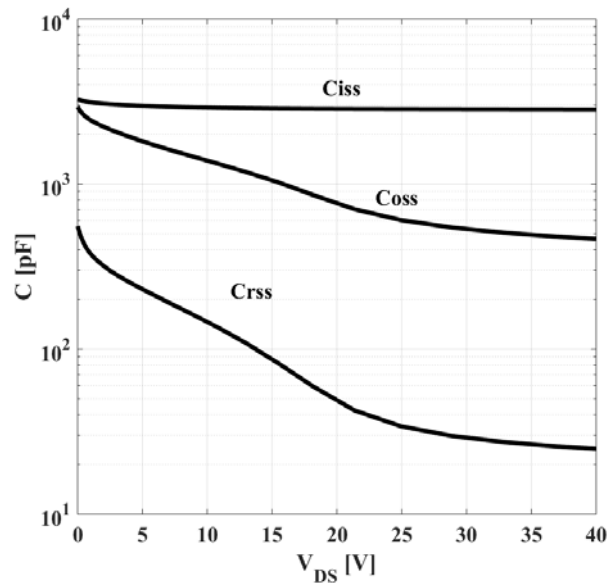


Figure 14: Typ. Capacitances

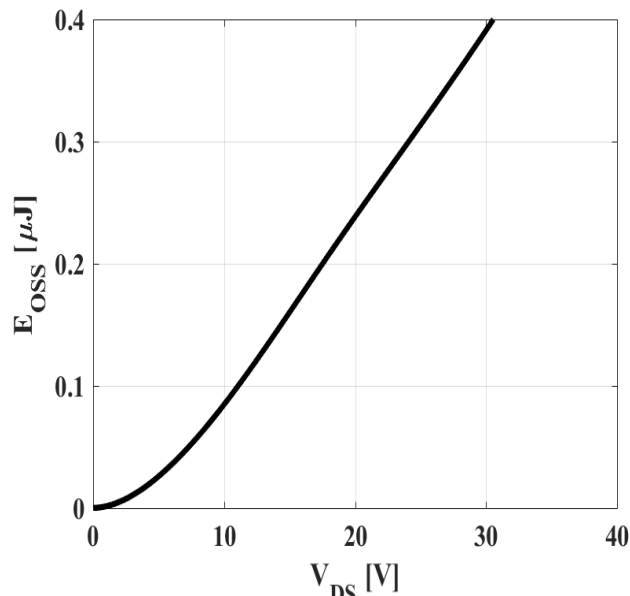


Figure 15: Coss Stored Energy