Description

The GT1003A uses advanced trench technology and design to provide excellent $R_{DS(ON)}$, low gate charge. This device is suitable for use in high frequency Synchronous-recification application.

AEC-Q101 Qualified

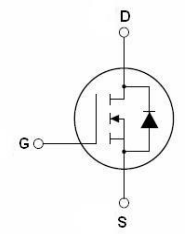
General Features

V_{DSS}	$R_{DS\,ON}$ @ 10V (Typ)	I_D
100V	110mΩ	3A

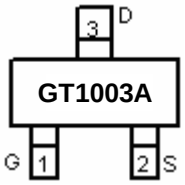
- High density cell design for ultra low Rdson
- Lead free product is acquired
- Excellent package for good heat dissipation
- RoHS Compliant

Application

- Consumer electronic power supply
- Isolated DC/DC converter
- Motor control



Schematic Diagram



Marking and Pin Assignment



SOT-23-3

Ordering Information

Part Number	Marking	Case	Packaging
GT1003A	GT1003A	SOT-23-3	3000pcs/Reel

Absolute Maximum Ratings (TA=25℃unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous	I_D	3	A
Drain Current-Pulsed (Note 1)	I_{DM}	10	A
Maximum Power Dissipation	P_D	1.6	W
Single pulsed avalanche energy (Note 5)	E_{AS}	1.2	mJ
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55 To 150	℃

Thermal Characteristic

Thermal Resistance,Junction-to-Ambient (Note 2)	$R_{\theta JA}$	80	℃/W

Electrical Characteristics (TA=25℃unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	100	112	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=100V,V_{GS}=0V	-	-	1	μA

Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	-	-	±100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	1	1.7	3	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=3A	-	110	140	mΩ
Dynamic Characteristics (Note4)						
Input Capacitance	C_{lss}	V_{DS}=50V,V_{GS}=0V, F=1.0MHz	-	206	-	PF
Output Capacitance	C_{oss}		-	28.9	-	PF
Reverse Transfer Capacitance	C_{rss}		-	1.4	-	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=50V,I_D=3A V_{GS}=10V,R_{GEN}=2Ω	-	14.7	-	ns
Turn-on Rise Time	t_r		-	3.5	-	ns
Turn-Off Delay Time	$t_{d(off)}$		-	20.9	-	ns
Turn-Off Fall Time	t_f		-	2.7	-	ns
Total Gate Charge	Q_g	V_{DS}=50V,I_D=3A, V_{GS}=10V	-	4.3	-	nC
Gate-Source Charge	Q_{gs}		-	1.5	-	nC
Gate-Drain Charge	Q_{gd}		-	1.1	-	nC
Gate plateau voltage	Vplateau			5.0		V
Drain-Source Diode Characteristics						
Diode Forward Current (Note 2)	I_S	V_{GS}<Vth	-	-	3	A
Pulsed Source Current	I_{SP}	V_{GS}<Vth			21	
Diode Forward Voltage (Note 3)	V_{SD}	V_{GS}=0V,I_S=3A	-	-	1.2	V
Reverse Recovery Time	t_{rr}	I_F=3A, di_F/dt= 100A/μs		32.1		nS
Reverse Recovery Charge	Q_{rr}			39.4		μC
Peak Reverse Recovery Current	I_{rrm}		-	2.1	-	A

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production
5. VDD=50 V, RG=50 Ω, L=0.3 mH, starting Tj=25 ° C.

Typical Electrical And Thermal Characteristics

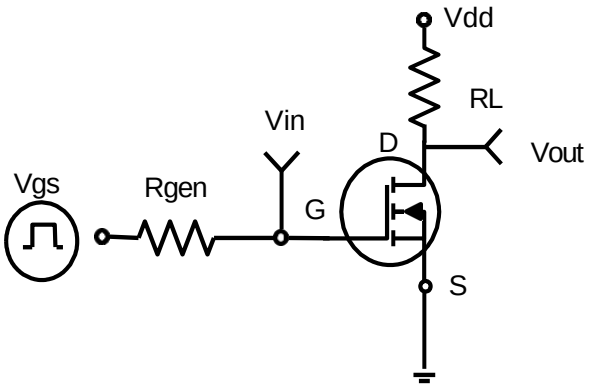


Figure 1. Switching Test Circuit

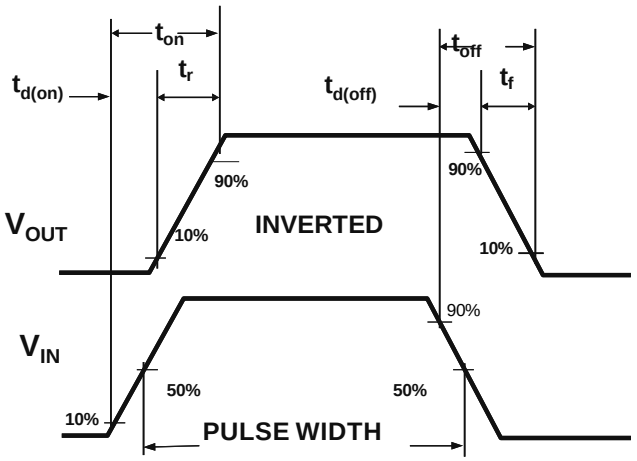


Figure 2. SwitchingWaveforms

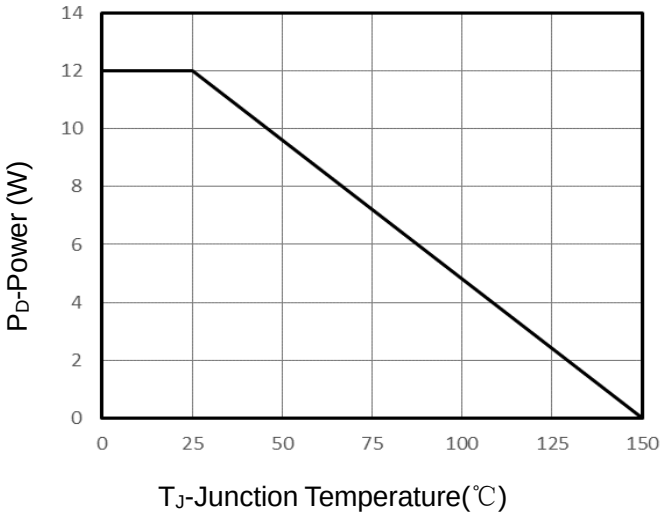


Figure 3. Power Dissipation

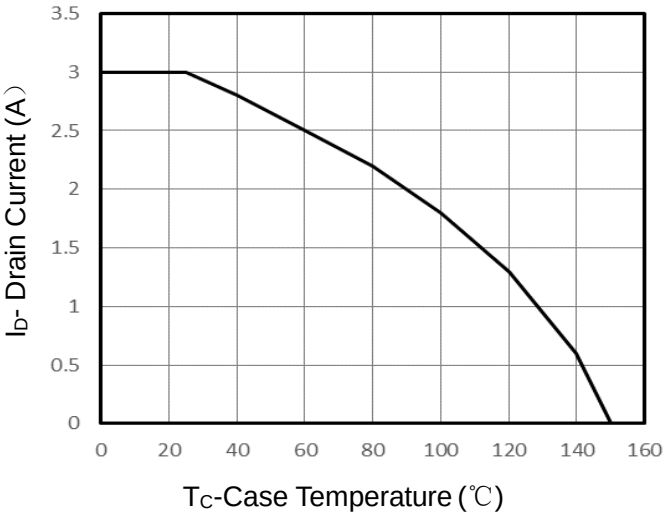


Figure 4. Drain Current

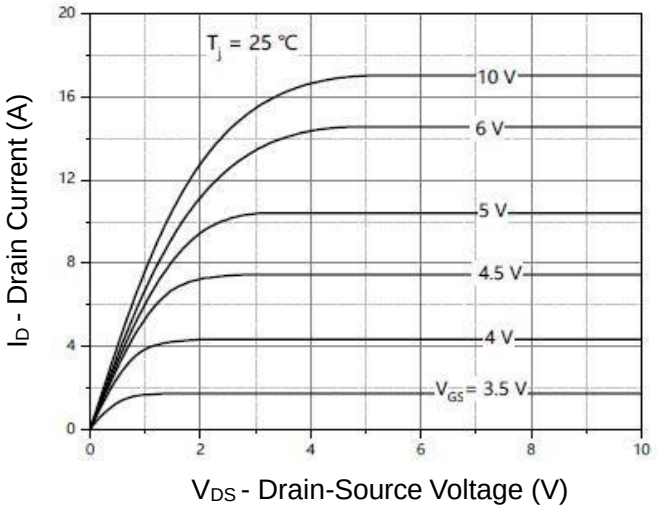


Figure 5. Output characteristics

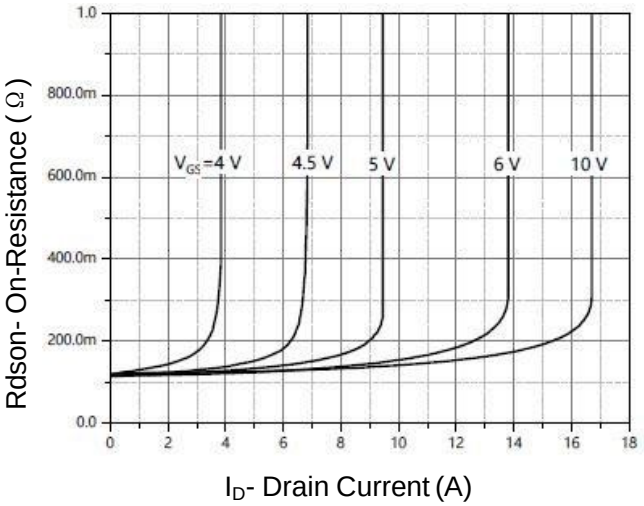


Figure 6. Drain-Source On-state resistance

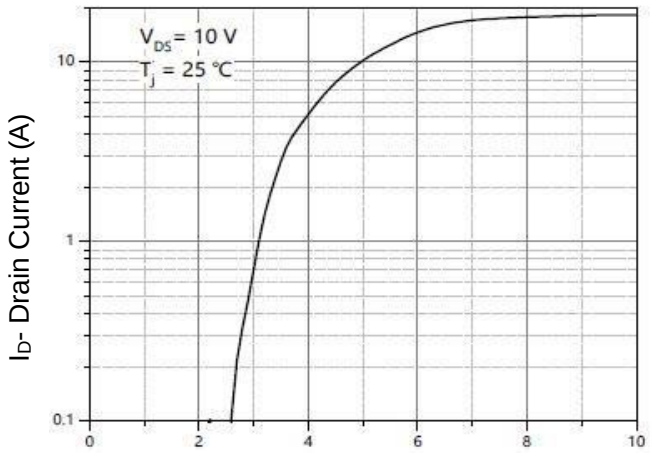


Figure 7. Transfer Characteristics

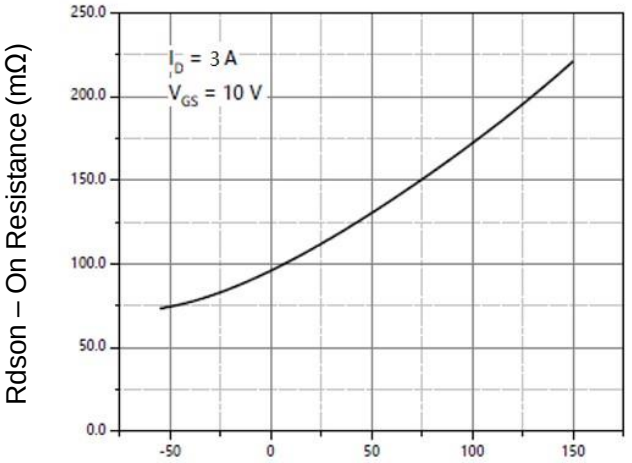


Figure 8. Drain-Source On-State Resistance

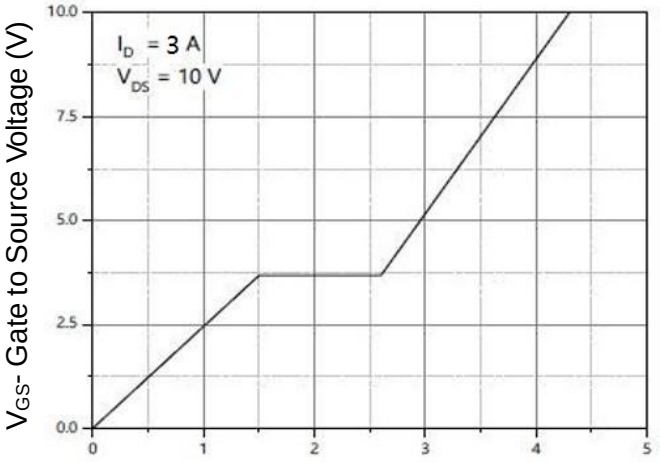


Figure 9. Gate Charge

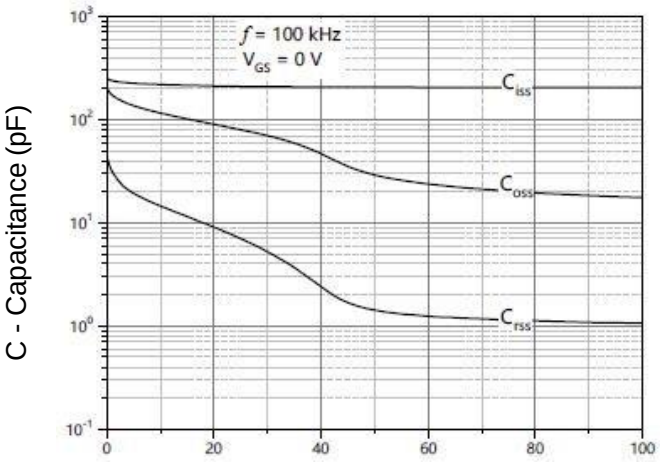


Figure 10. Capacitance vs Vds

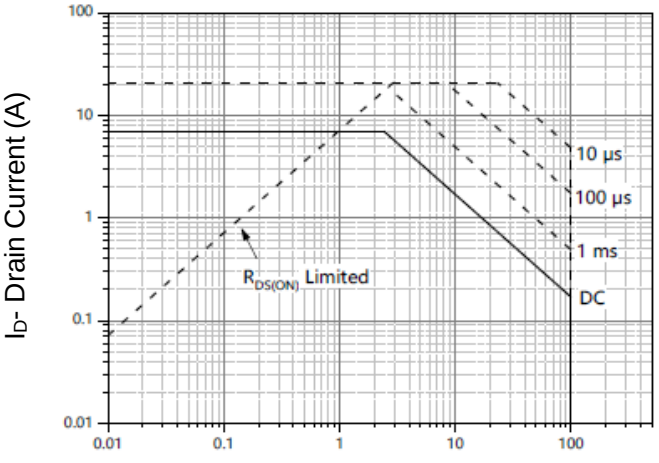


Figure 11. Safe Operation Area

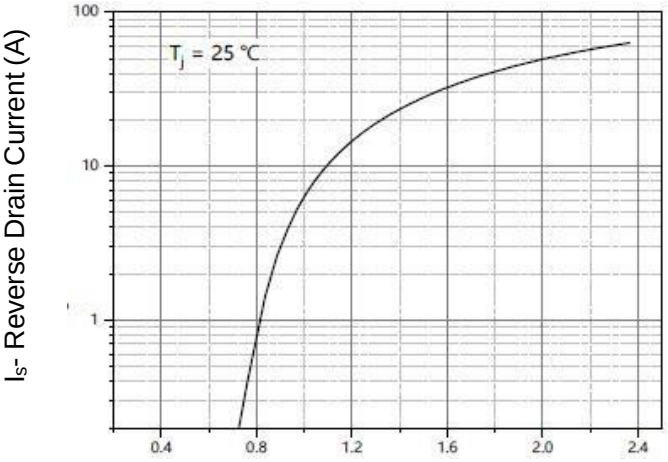


Figure 12. Source- Drain Diode Forward

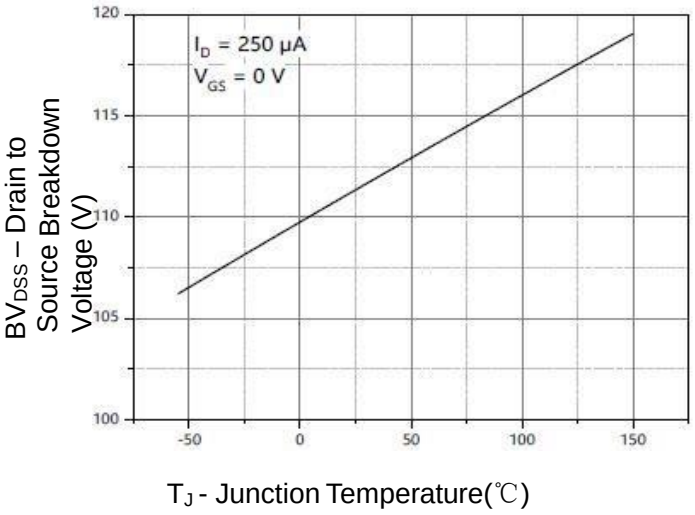
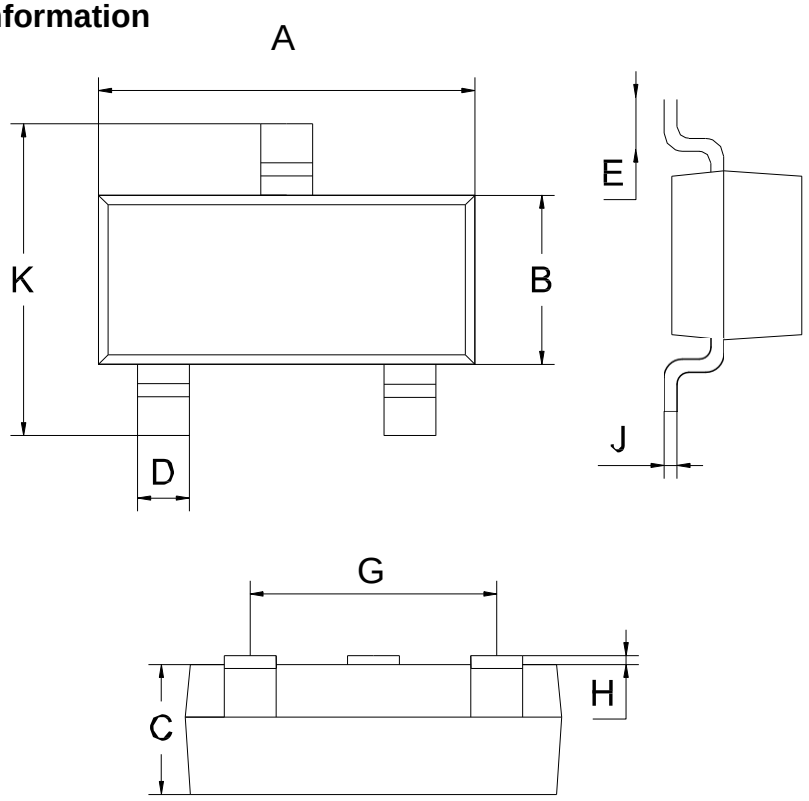


Figure 13. Drain-source breakdown voltage

SOT-23-3 Package Information



SOT-23-3			
Dim	MIN	NOM	MAX
A	2.80	2.90	3.00
B	1.50	1.60	1.70
C	1.00	1.10	1.20
D	0.30	0.40	0.50
E	0.25	0.40	0.55
G	1.90		
H	0.00	-	0.10
J	0.047	0.127	0.207
K	2.60	2.80	3.00
All Dimensions in mm			