Description

The GT10N10 uses advanced trench technology and design to provide excellent $R_{DS(ON)}$, low gate charge. This device is suitable for use in Synchronous-recification application.

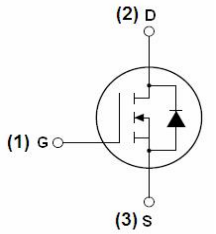
General Features

V_{DSS}	$R_{DS\,ON}$ @ 10V (Typ)	$R_{DS\,ON}$ @ 4.5V(Typ)	I_D
100V	115mΩ	150mΩ	7 A

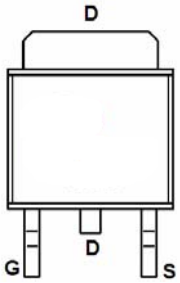
- High power and current handing capability
- Lead free product is acquired
- Surface mount package
- RoHS Compliant

Application

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



Schematic Diagram



Marking and Pin Assignment

TO-252

Ordering Information

Part Number	Marking	Case	Packaging
GT10N10	GT10N10	TO-252	2500pcs/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	7	A
Drain Current-Pulsed (Note 1)	I_{DM}	21	A
Maximum Power Dissipation	P_D	17	W
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55 To 150	℃

Thermal Characteristic

Thermal Resistance, Junciton-case	$R_{\theta JC}$	7.4	℃/W
Thermal Resistance,Junction-to-Ambient (Note 2)	$R_{\theta JA}$	73.5	℃/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	110	-	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	1.5	2	2.5	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=3.5A	-	115	140	mΩ
		V_{GS}=4.5V, I_D=3.5A	-	150	175	mΩ
Forward Transconductance	g_{FS}	V_{DS}=15V,I_D=2A	3	-	-	S
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=5A 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=5A, 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 Voltage (Note 3)	V_{SD}	V_{GS}=0V,I_S=7A	-	-	1.2	V
Diode Forward Current (Note 2)	I_S	V_{GS}<Vth	-	-	7	A

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production

Typical Electrical And Thermal Characteristics

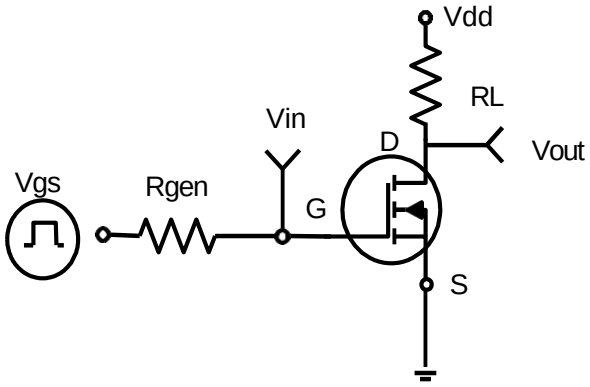


Figure 1:Switching Test Circuit

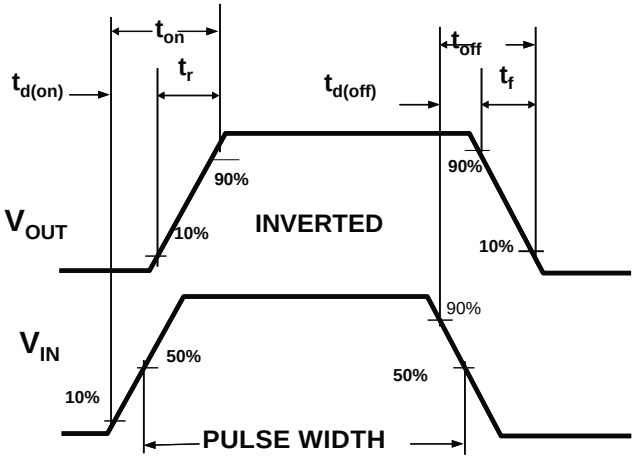


Figure 2:Switching Waveforms

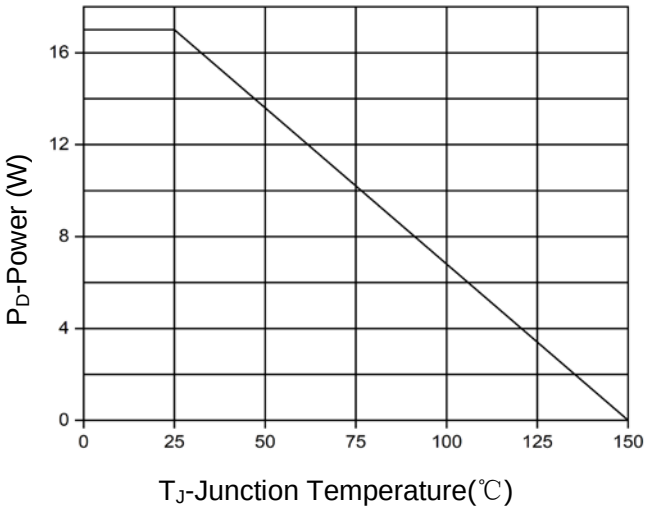


Figure 3 Power Dissipation

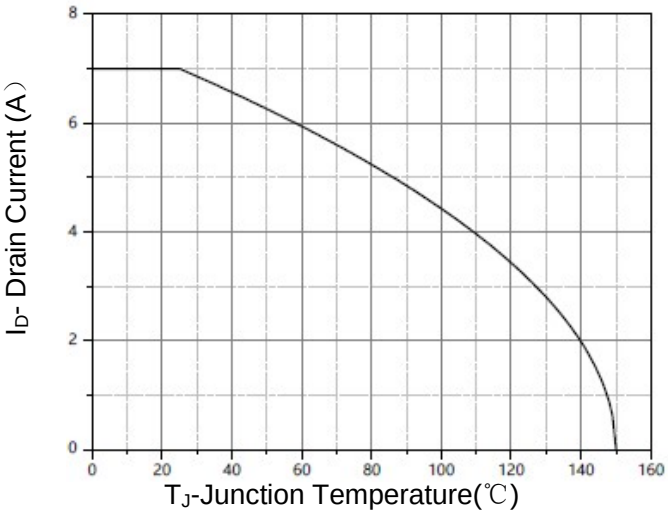


Figure 4 Drain Current

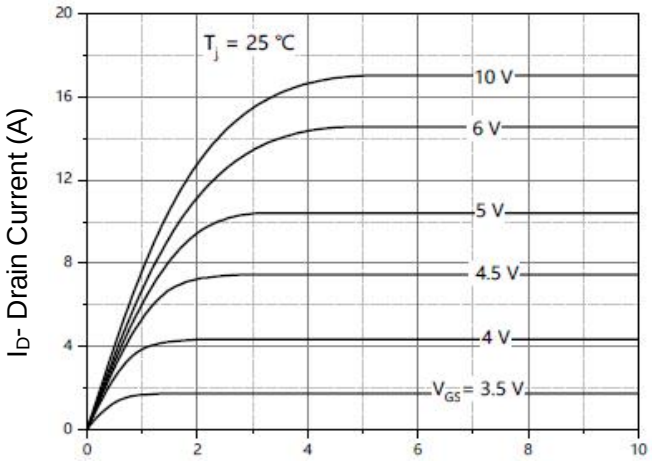


Figure 5 Output characteristics

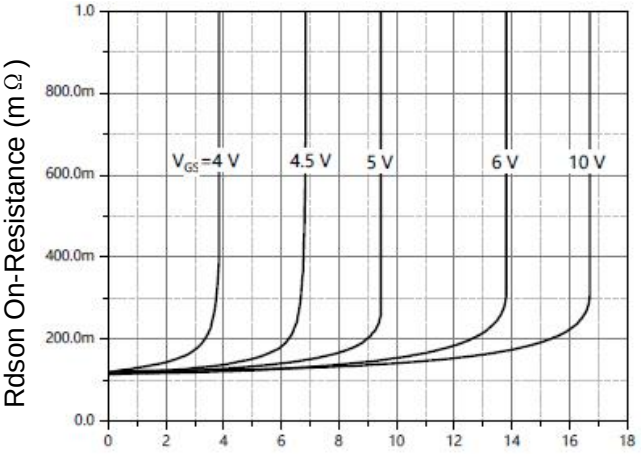


Figure 6 Drain-Source On-Resistance

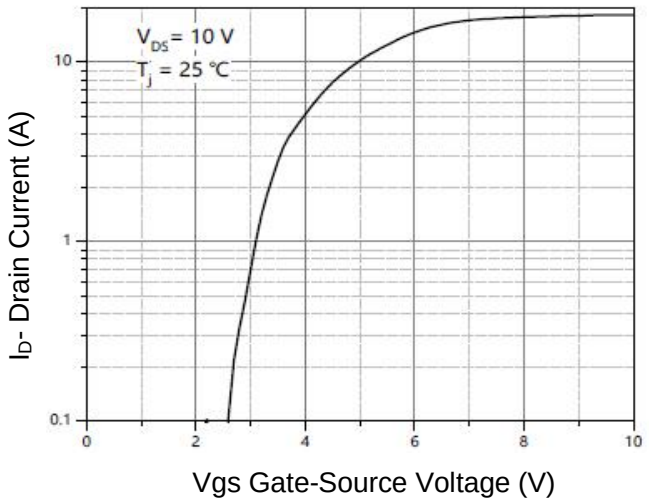


Figure 7 Transfer Characteristics

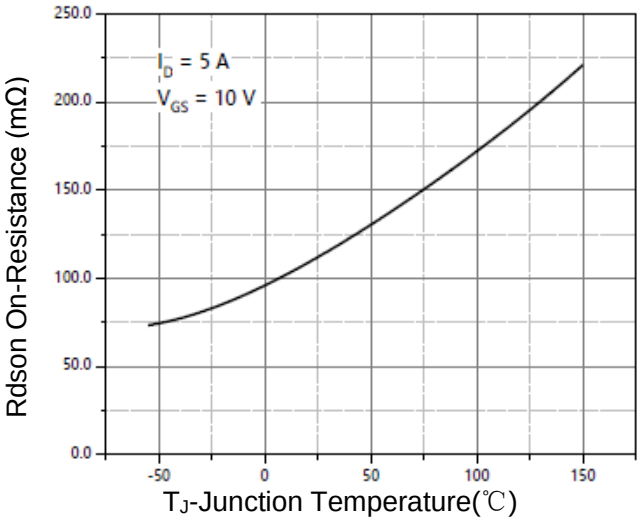


Figure 8 Drain-Source On-Resistance

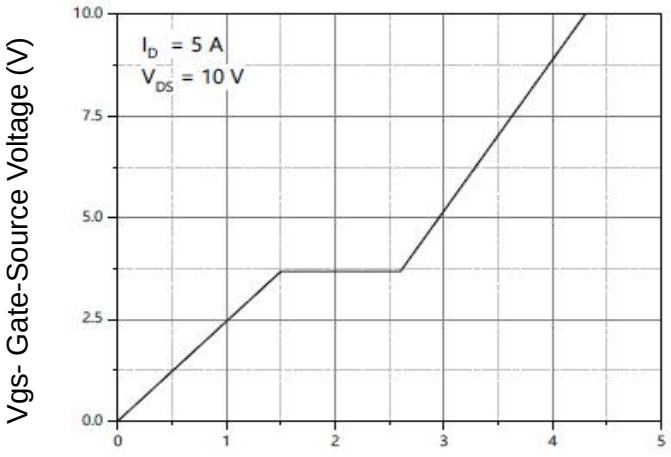


Figure 9 Gate Charge

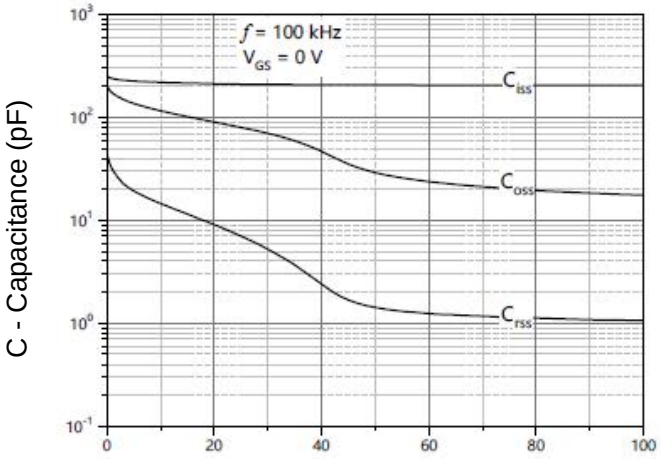


Figure 10 Capacitance vs Vds

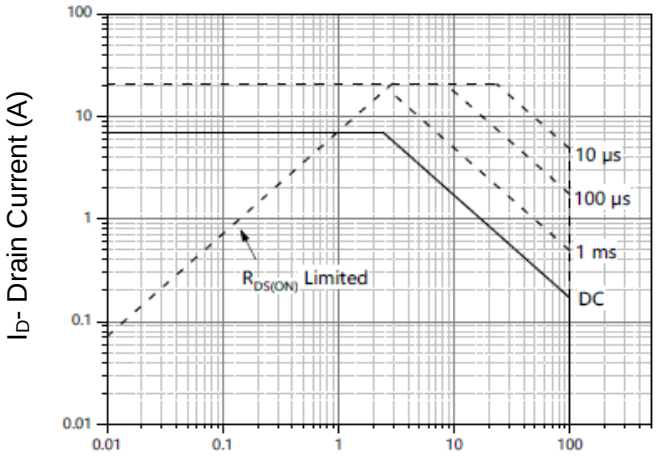


Figure 11 Safe Operation Area

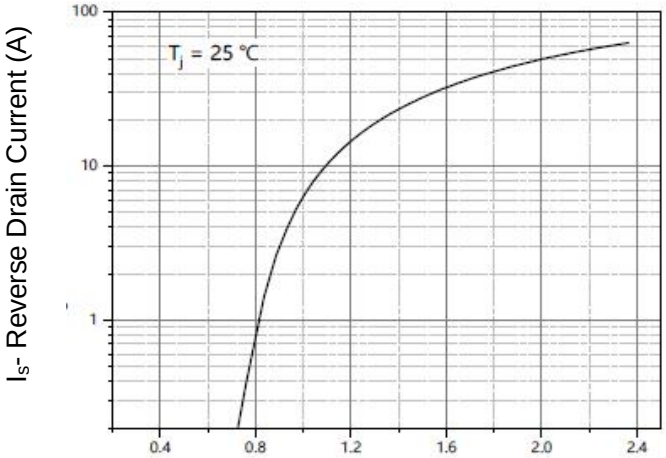


Figure 12 Source- Drain Diode Forward

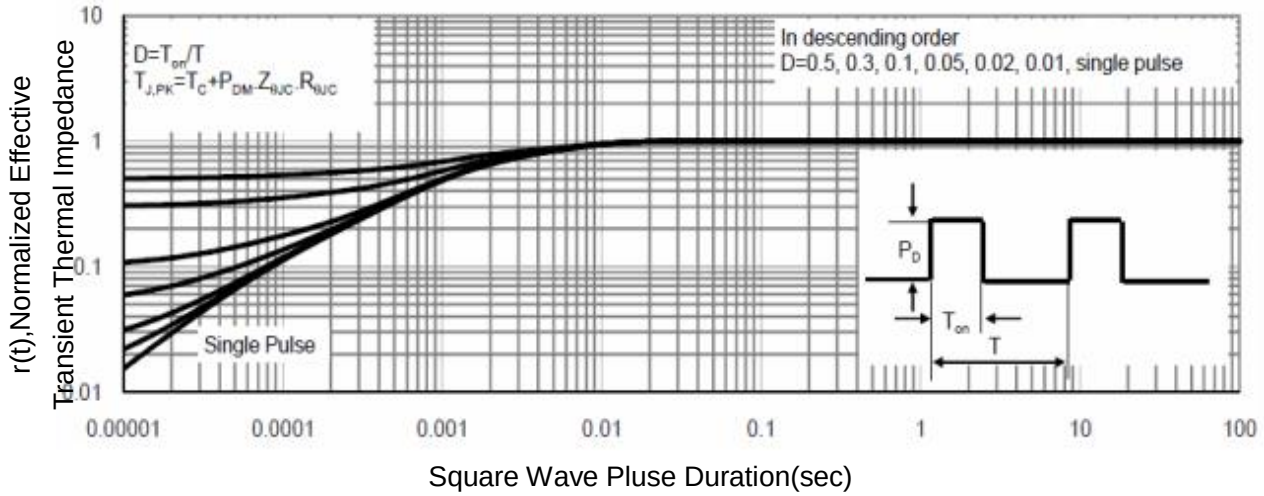
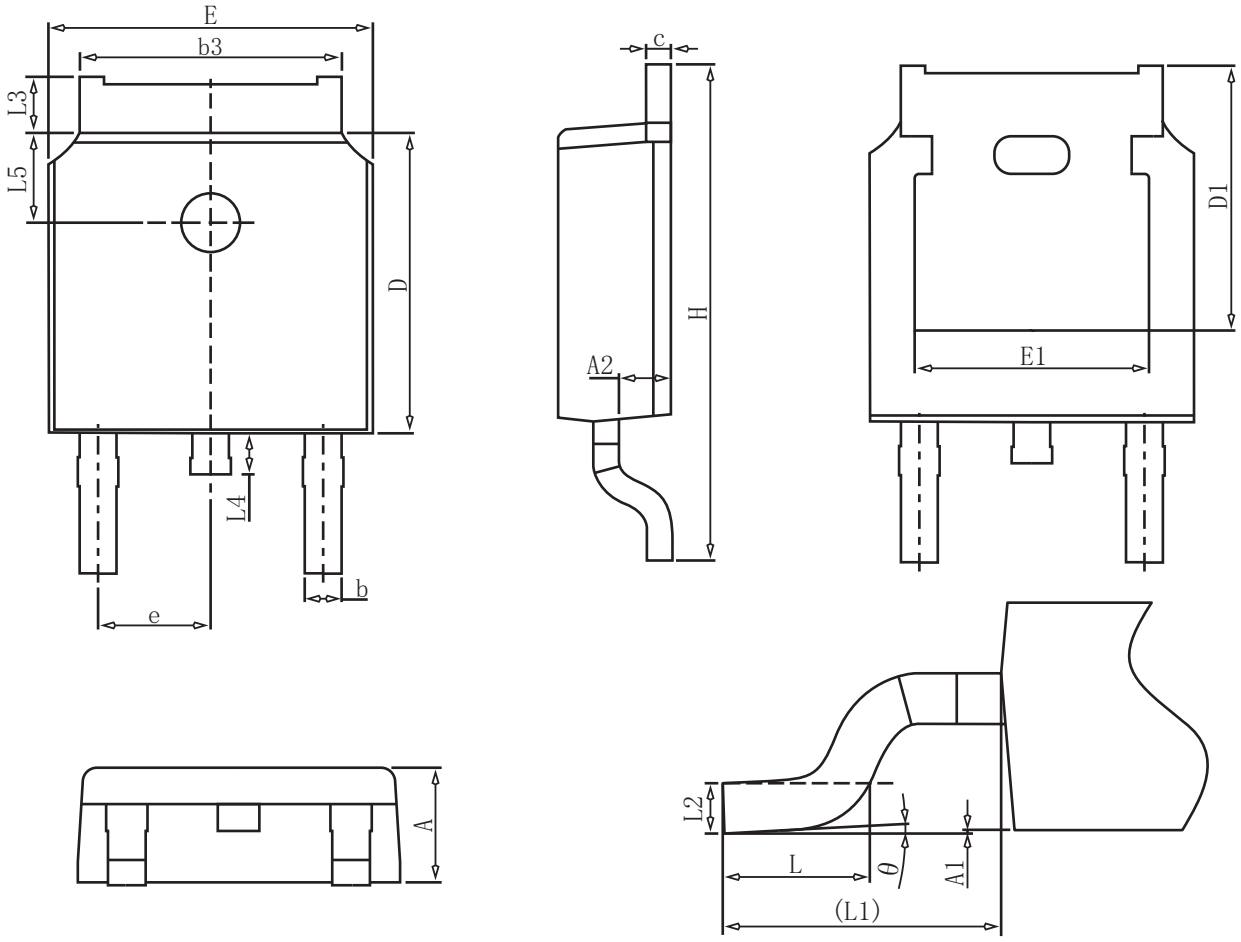


Figure 13 Normalized Maximum Transient Thermal Impedance

Package information



COMMON DIMENSIONS

SYMBOL	mm		
	MIN	NOM	MAX
A	2.20	2.30	2.40
A1	0.00	–	0.20
A2	0.97	1.07	1.17
b	0.68	0.78	0.90
b3	5.20	5.33	5.50
c	0.43	0.53	0.63
D	5.98	6.10	6.22
D1		5.30REF	
E	6.40	6.60	6.80
E1	4.63	–	–
e		2.286BSC	
H	9.40	10.10	10.50
L	1.38	1.50	1.75
L1		2.90REF	
L2		0.51BSC	
L3	0.88	–	1.28
L4	0.50	–	1.00
L5	1.65	1.80	1.95
θ	0°	–	8°

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