

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

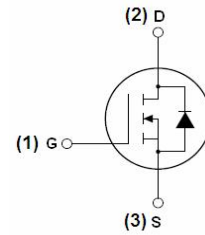
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V_{DS}	$R_{DS(ON)}$ @ 10V (Typ)	$R_{DS(ON)}$ @ 4.5V(Typ)	I_D
100V	115m Ω	150m Ω	7 A

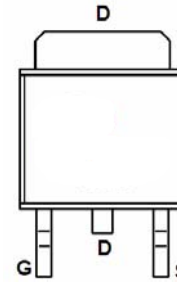
- High power and current handling capability
- Lead free product is acquired
- Surface mount package
- RoHS Compliant

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°C 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	°C

Thermal Characteristic

Thermal Resistance, Junction-case	$R_{\theta JC}$	7.4	°C/W
Thermal Resistance, Junction-to-Ambient (Note 2)	$R_{\theta JA}$	73.5	°C/W

Electrical Characteristics (TA=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	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 _{ISS}	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	V _{plateau}			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} <V _{th}	-	-	7	A

Notes:

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

Typical Electrical And Thermal Characteristics

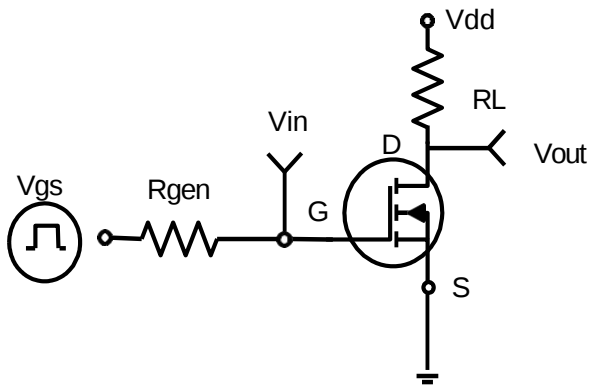


Figure 1: Switching Test Circuit

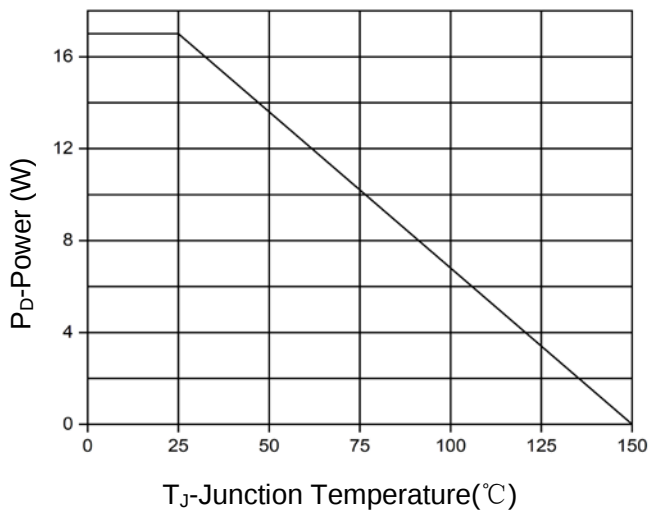


Figure 3 Power Dissipation

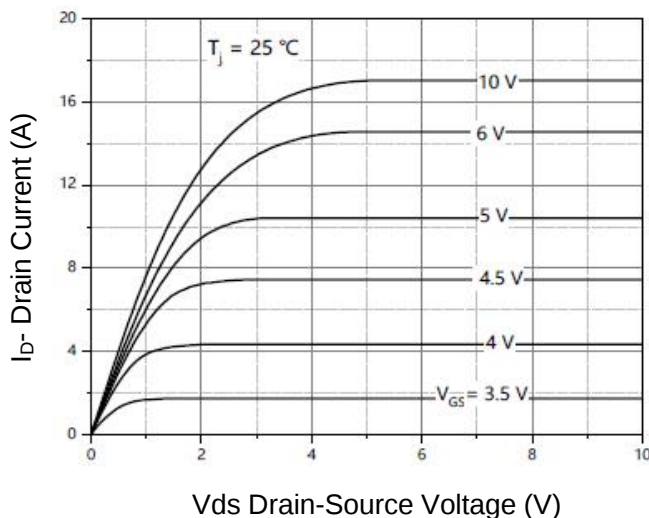


Figure 5 Output characteristics

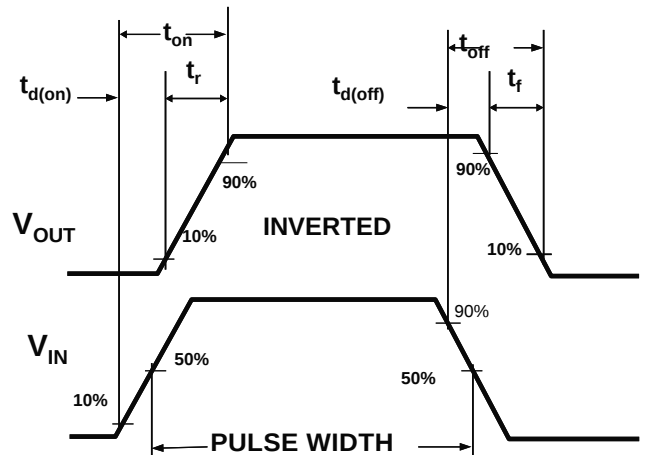


Figure 2: Switching Waveforms

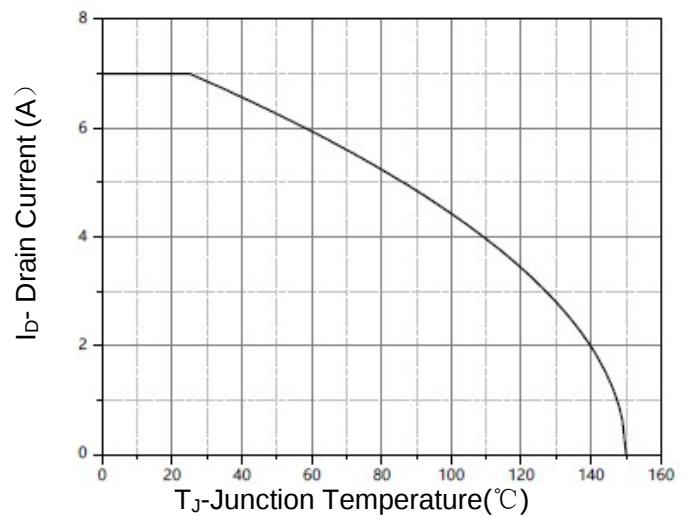


Figure 4 Drain Current

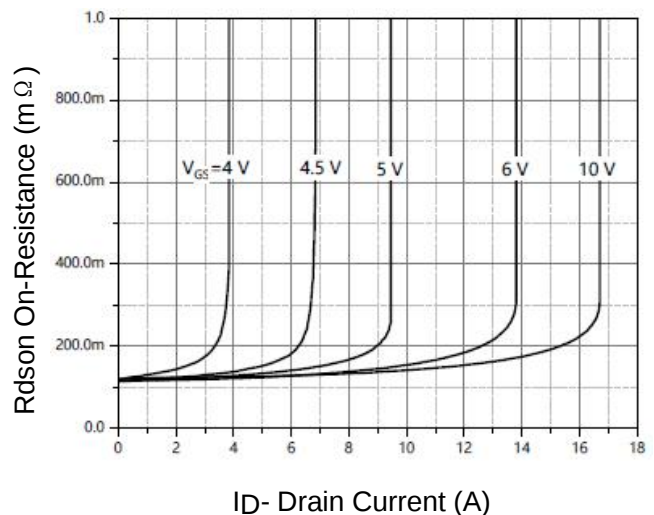


Figure 6 Drain-Source On-Resistance

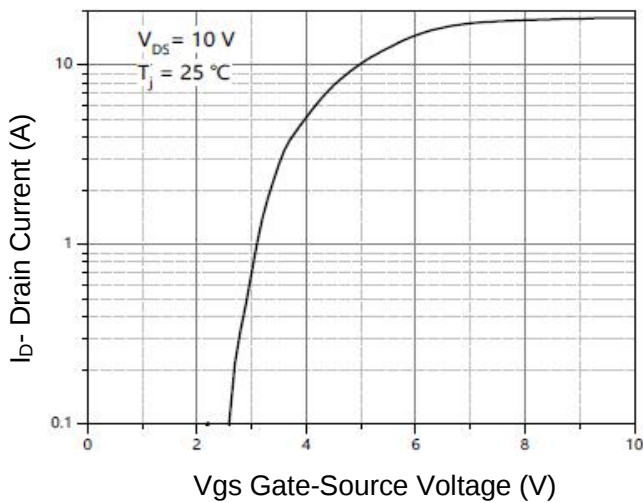


Figure 7 Transfer Characteristics

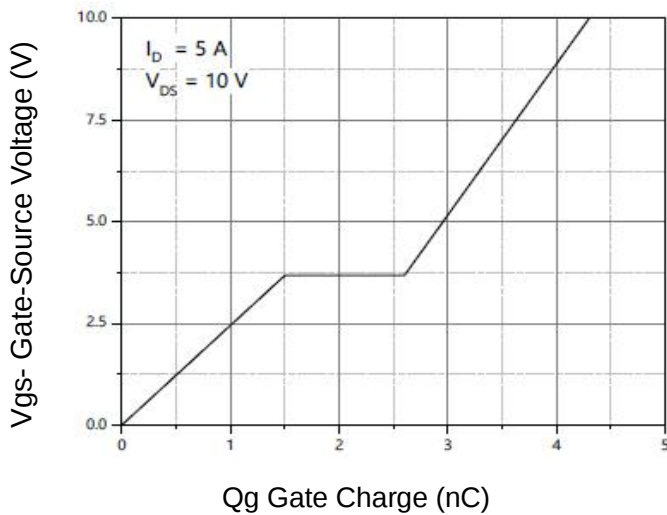


Figure 9 Gate Charge

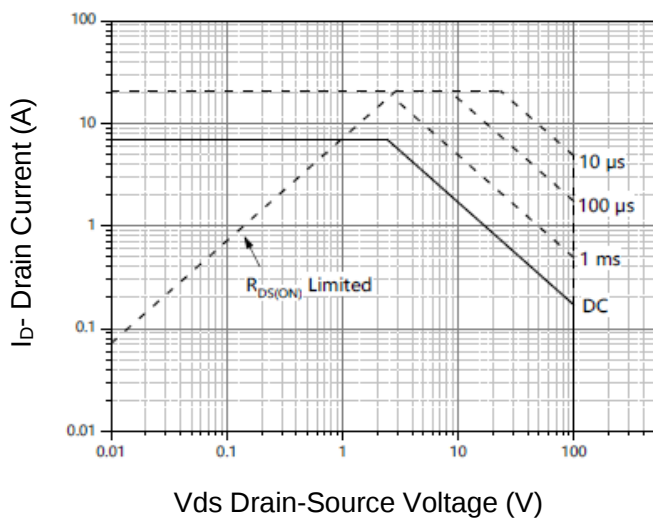


Figure 11 Safe Operation Area

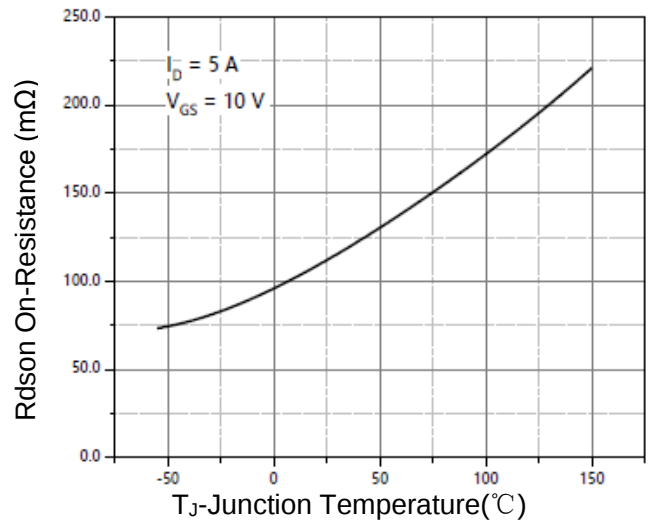


Figure 8 Drain-Source On-Resistance

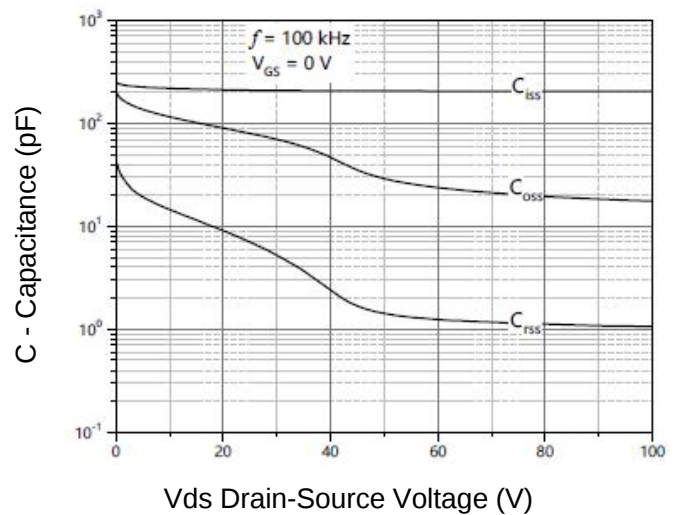


Figure 10 Capacitance vs Vds

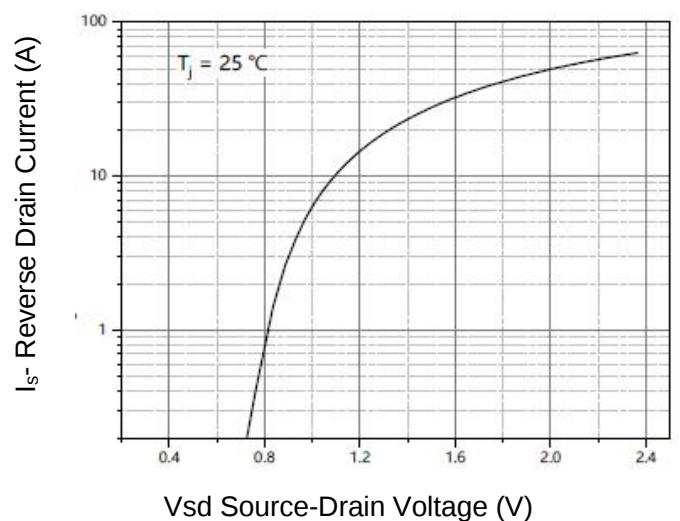


Figure 12 Source- Drain Diode Forward

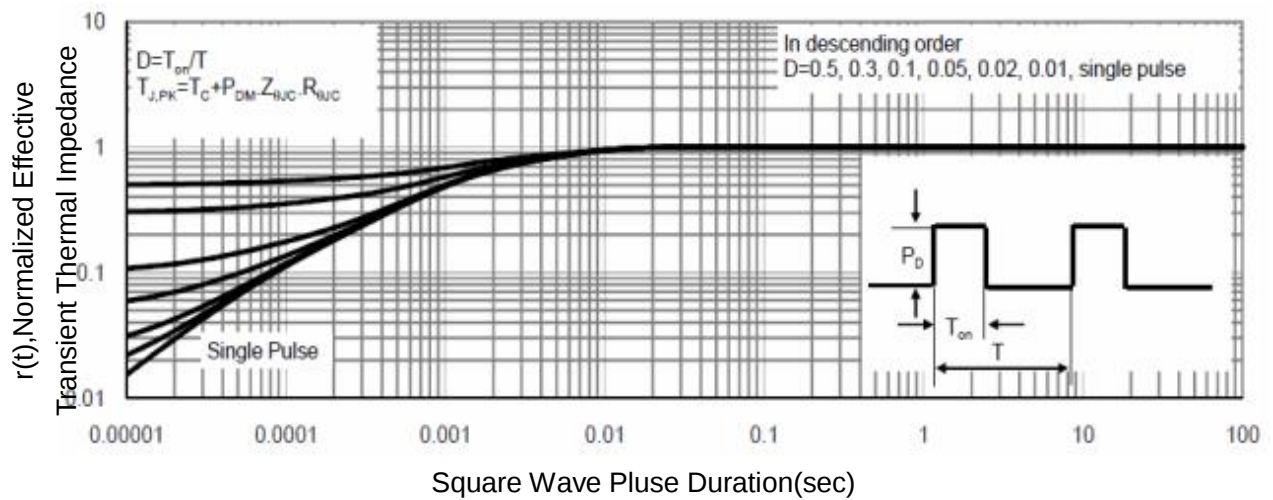
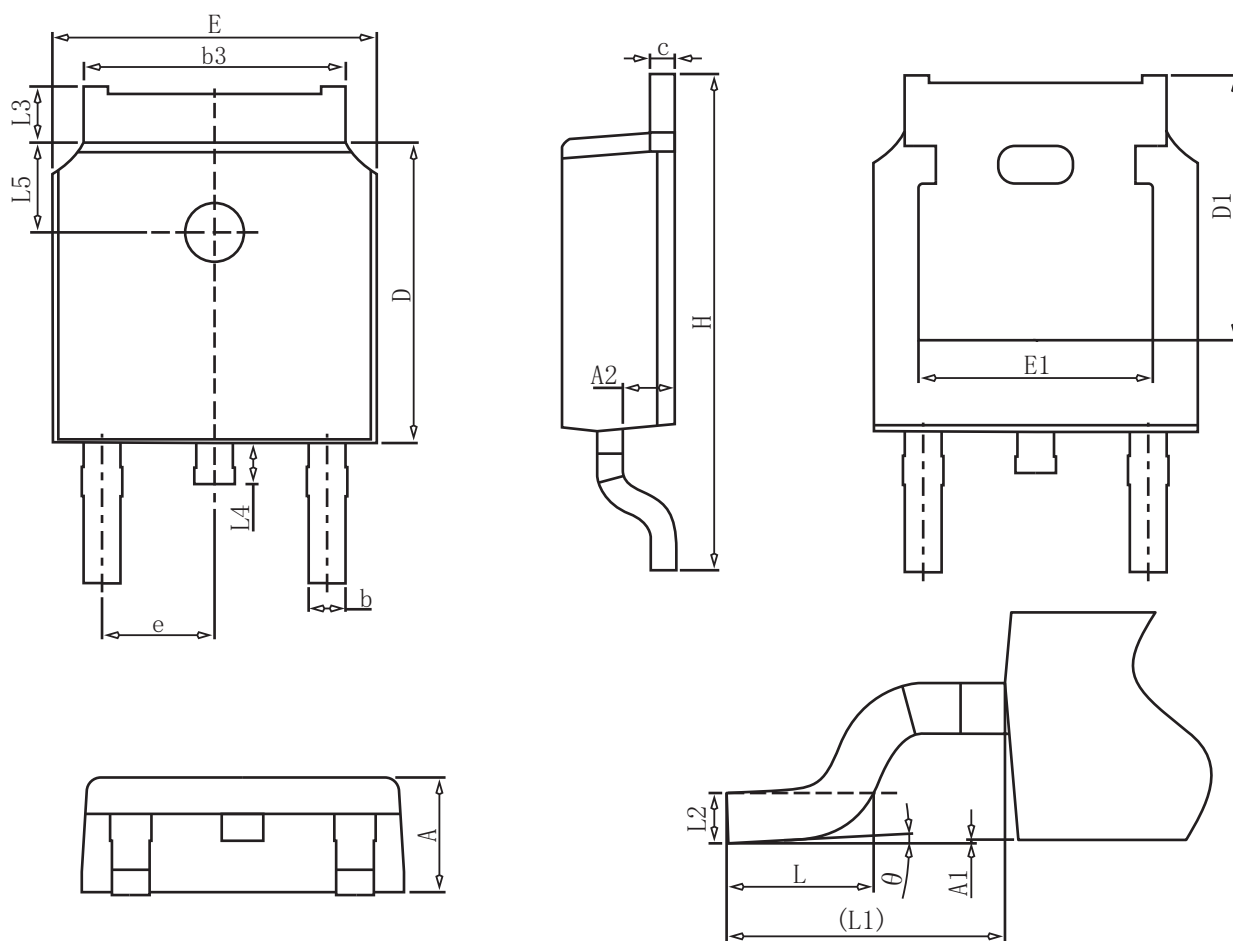


Figure 13 Normalized Maximum Transient Thermal Impedance

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°