

GTT8209E**N-CHANNEL ENHANCEMENT MODE POWER MOSFET**

BV _{DSS}	20V
R _{DS(ON)}	21mΩ
I _D	7A

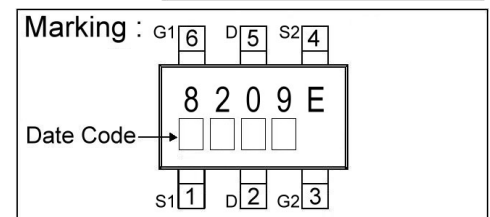
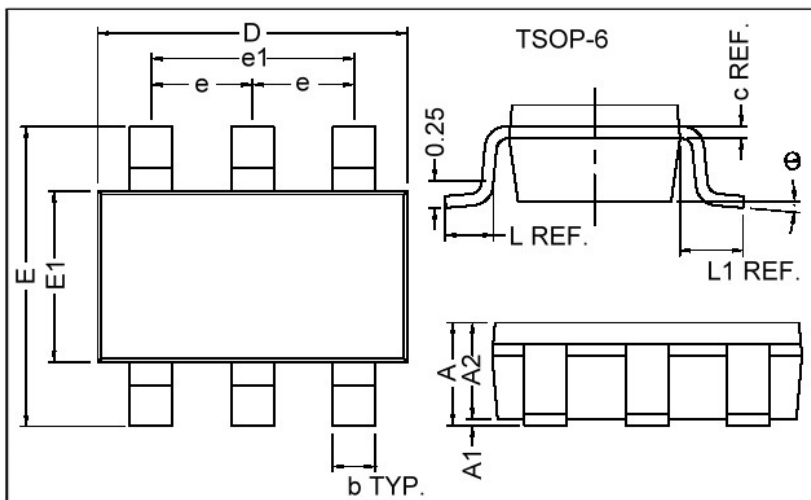
Description

The GTT8209E used advanced trench technology to provide excellent on-resistance extremely efficient and cost-effectiveness device.

The GTT8209E is universally used for all commercial-industrial applications.

Features

- * Lower Gate Charge
- * Small Package Outline
- * RoHS Compliant

Package Dimensions

REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	1.10	MAX.	L	0.45	REF.
A1	0	0.10	L1	0.60	REF.
A2	0.70	1.00	θ	0°	10°
c	0.12	REF.	b	0.30	0.50
D	2.70	3.10	e	0.95	REF.
E	2.60	3.00	e1	1.90	REF.
E1	1.40	1.80			

Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V _{DS}	20	V
Gate-Source Voltage	V _{GS}	±12	V
Continuous Drain Current ³	I _D @TA=25°C	7	A
Continuous Drain Current ³	I _D @TA=70°C	5.7	A
Pulsed Drain Current ^{1,2}	I _{DM}	30	A
Total Power Dissipation	P _D @TA=25°C	1.2	W
Linear Derating Factor		0.01	W/°C
Operating Junction and Storage Temperature Range	T _j , T _{stg}	-55 ~ +150	°C

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-ambient ³ Max.	R _{thj-a}	110	°C/W

Electrical Characteristics (T_j = 25°C unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV _{DSS}	20	-	-	V	V _{GS} =0, I _D =250uA
Gate Threshold Voltage	V _{GS(th)}	0.5	-	1.0	V	V _{DS} =V _{GS} , I _D =250uA
Forward Transconductance	g _{fs}	-	24	-	S	V _{DS} =5V, I _D =7A
Gate-Source Leakage Current	I _{GSS}	-	-	±10	uA	V _{GS} = ±10V
Drain-Source Leakage Current(T _j =25°C)	I _{DSS}	-	-	1	uA	V _{DS} =16V, V _{GS} =0
Drain-Source Leakage Current(T _j =55°C)		-	-	5	uA	V _{DS} =16V, V _{GS} =0
Static Drain-Source On-Resistance	R _{DS(ON)}	-	-	21	mΩ	V _{GS} =10V, I _D =7.0A
		-	-	24		V _{GS} =4.5V, I _D =6.6A
		-	-	32		V _{GS} =2.5V, I _D =5.5A
		-	-	50		V _{GS} =1.8V, I _D =2.0A
Total Gate Charge ²	Q _g	-	9.3	-	nC	I _D =7A
Gate-Source Charge	Q _{gs}	-	0.6	-		V _{DS} =10V
Gate-Drain ("Miller") Change	Q _{gd}	-	3.6	-		V _{GS} =4.5V
Turn-on Delay Time ²	T _{d(on)}	-	5.7	-	ns	V _{DS} =10V V _{GS} =5V R _G =3Ω R _L =1.4Ω
Rise Time	T _r	-	11.5	-		
Turn-off Delay Time	T _{d(off)}	-	31.5	-		
Fall Time	T _f	-	9.7	-		
Input Capacitance	C _{iss}	-	630	-	pF	V _{GS} =0V V _{DS} =10V f=1.0MHz
Output Capacitance	C _{oss}	-	164	-		
Reverse Transfer Capacitance	C _{rss}	-	137	-		
Gate Resistance	R _g	-	1.5	-	Ω	f=1.0MHz

Source-Drain Diode

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward On Voltage ²	V _{SD}	-	-	1.0	V	I _S =1.0A, V _{GS} =0V
Reverse Recovery Time ²	T _{rr}	-	15.2	-	ns	I _S =7A, V _{GS} =0V dI/dt=100A/μs
Reverse Recovery Charge	Q _{rr}	-	6.3	-	nC	
Continuous Source Current (Body Diode)	I _S	-	-	2.5	A	V _D =V _G =0V, V _S =1.0V

Notes: 1. Pulse width limited by Max. junction temperature.

2. Pulse width ≤ 300us, duty cycle ≤ 2%.

3. Surface mounted on 1 in² copper pad of FR4 board t ≤ 5sec; 180°C/W when mounted on Min. copper pad.

Characteristics Curve

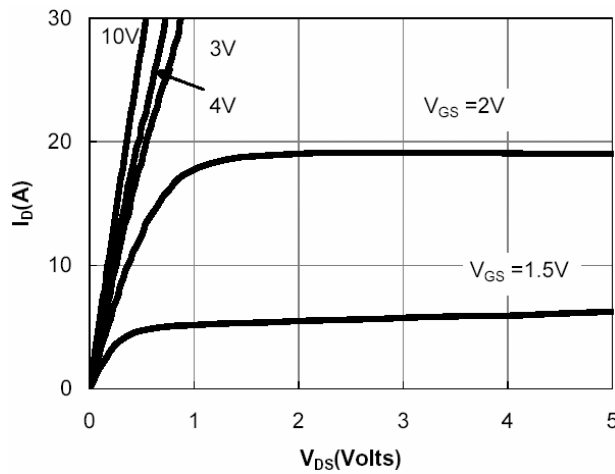


Fig 1. Typical Output Characteristics

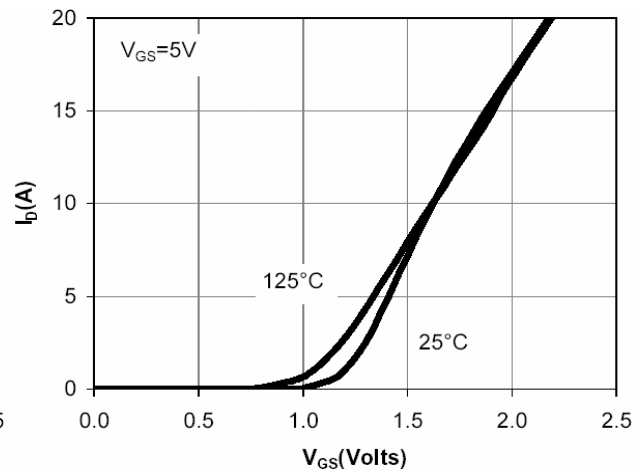


Fig 2. Transfer Characteristics

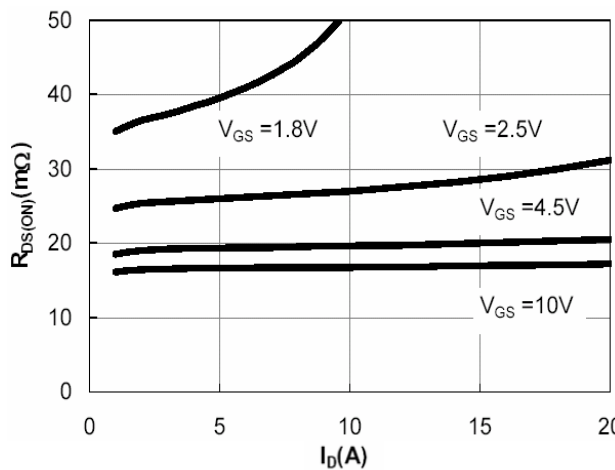


Fig 3. On-Resistance v.s. Drain Current and Gate Voltage

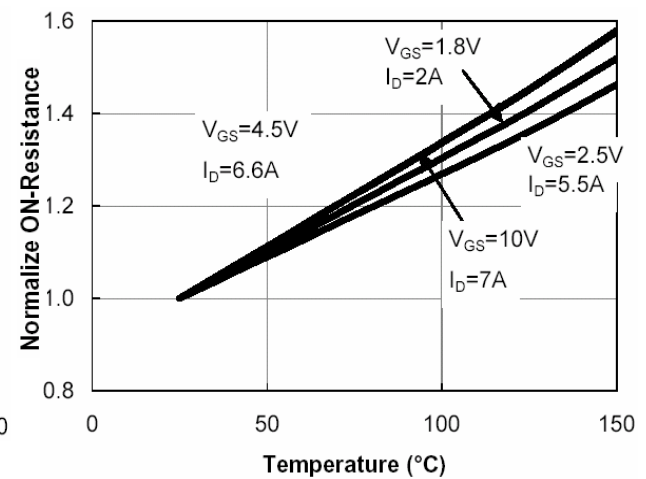


Fig 4. On-Resistance v.s. Junction Temperature

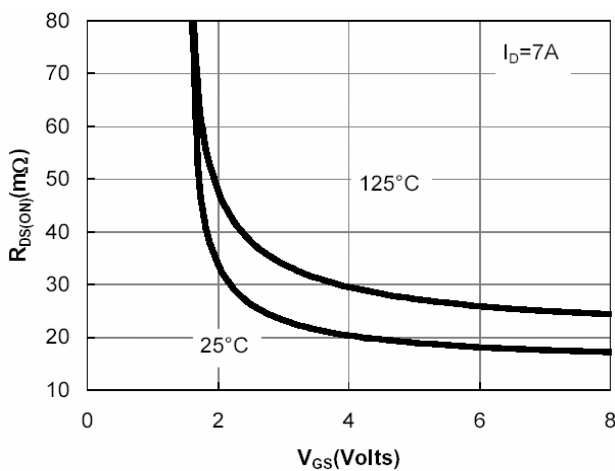


Fig 5. On-Resistance v.s. Gate-Source Voltage

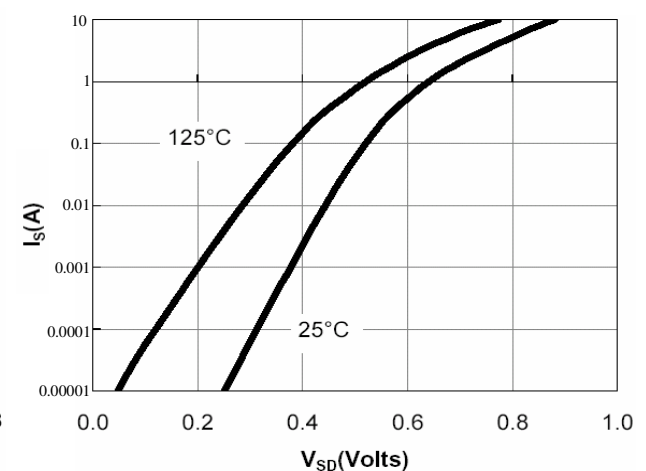


Fig 6. Body Diode Characteristics

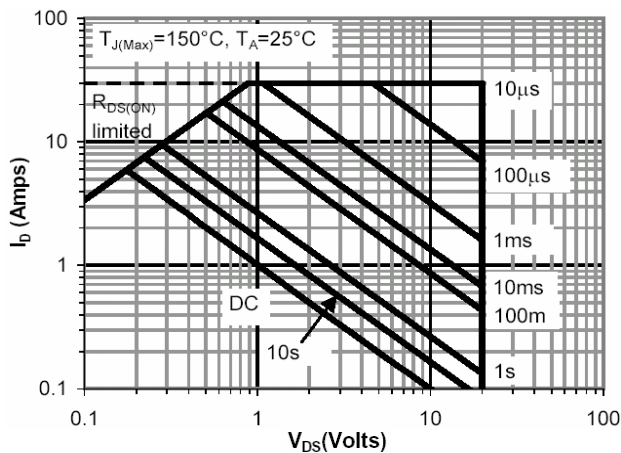


Fig 7. Maximum Safe Operating Area

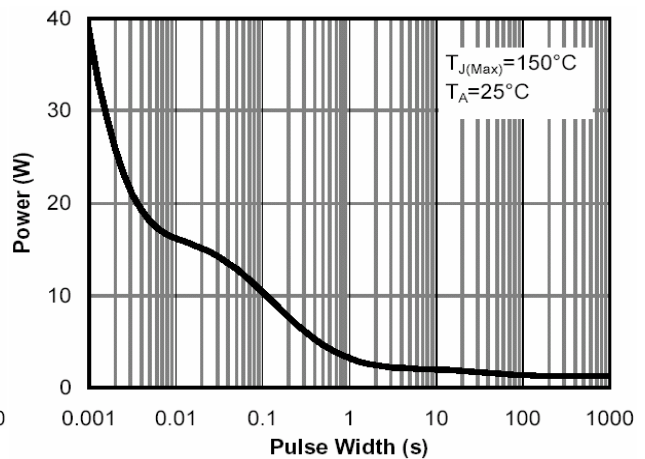


Fig 8. Single Pulse Power Rating Junction-to-Ambient

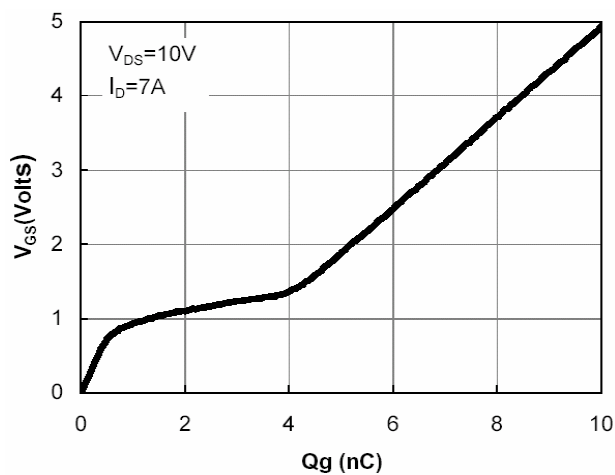


Fig 9. Gate Charge Characteristics

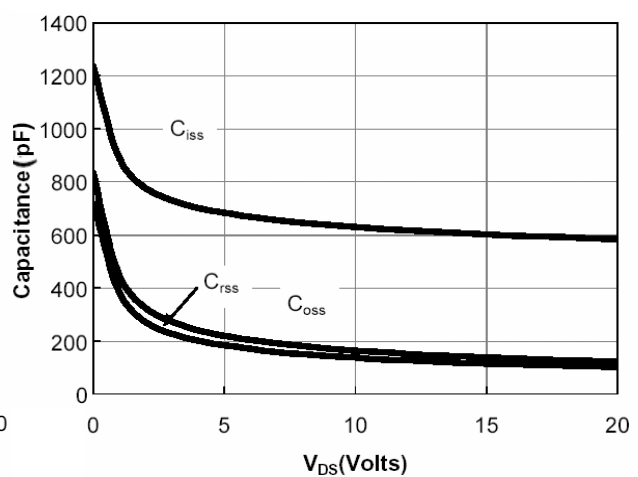


Fig 10. Typical Capacitance Characteristics

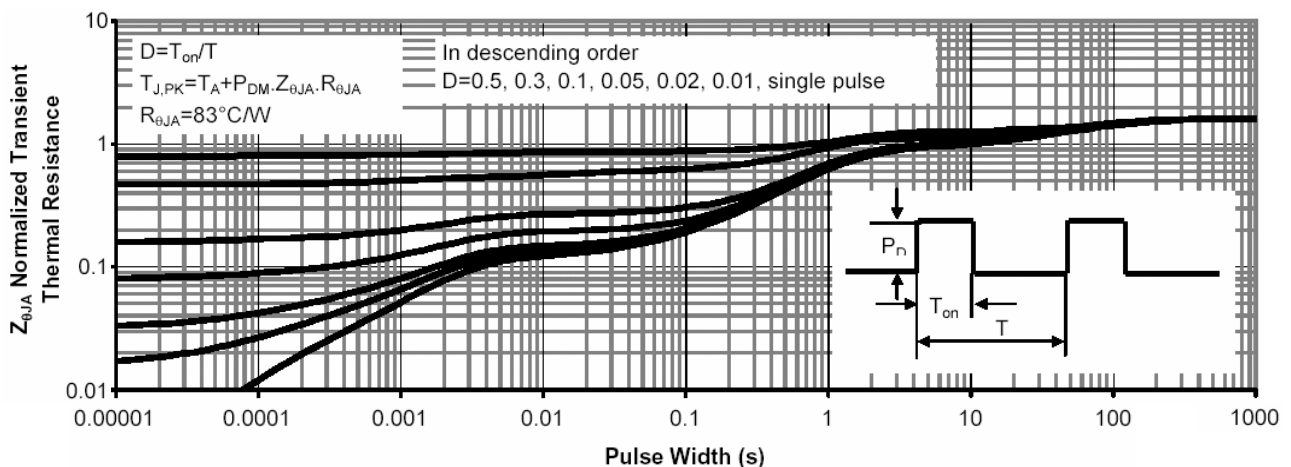


Fig 11. Normalized Maximum Transient Thermal Impedance

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