

G2U9972

N-CHANNEL ENHANCEMENT MODE POWER MOSFET

BVDSS	60V
RDS(ON)	18mΩ
ID	60A

Description

The G2U9972 provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness.

The TO-262 package is universally preferred for all commercial-industrial applications and suited for low voltage applications such as DC/DC converters.

Features

- *Simple Drive Requirement
- *Lower Gate Charge

Package Dimensions

REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	4.40	4.80	c2	1.25	1.45
b	0.76	1.00	b2	1.17	1.47
c	0.36	0.50	L	13.25	14.25
D	8.60	9.00	e	2.54 REF.	
E	9.80	10.4	L2	1.27 REF.	

Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 25	V
Continuous Drain Current, $V_{GS}@10V$	$I_D @T_C=25^\circ C$	60	A
Continuous Drain Current, $V_{GS}@10V$	$I_D @T_C=100^\circ C$	38	A
Pulsed Drain Current ¹	I_{DM}	230	A
Total Power Dissipation	$P_D @T_C=25^\circ C$	89	W
Linear Derating Factor		0.7	W/ $^\circ C$
Avalanche Current ²	I_{AR}	30	A
Operating Junction and Storage Temperature Range	T_j, T_{stg}	-55 ~ +150	$^\circ C$

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-case Max.	Rthj-c	1.4	$^\circ C/W$
Thermal Resistance Junction-ambient Max.	Rthj-a	62	$^\circ C/W$

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	60	-	-	V	$V_{GS}=0, I_D=250\mu A$
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS} / \Delta T_j$	-	0.06	-	V/°C	Reference to 25°C, $I_D=1mA$
Gate Threshold Voltage	$V_{GS(th)}$	1.0	-	3.0	V	$V_{DS}=V_{GS}, I_D=250\mu A$
Forward Transconductance	g_{fs}	-	55	-	S	$V_{DS}=10V, I_D=35A$
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	$V_{GS}= \pm 25V$
Drain-Source Leakage Current(T _j =25°C)	I_{DSS}	-	-	10	uA	$V_{DS}=60V, V_{GS}=0$
Drain-Source Leakage Current(T _j =150°C)		-	-	25	uA	$V_{DS}=48V, V_{GS}=0$
Static Drain-Source On-Resistance ³	$R_{DS(ON)}$	-	-	18	mΩ	$V_{GS}=10V, I_D=35A$
		-	-	22		$V_{GS}=4.5V, I_D=25A$
Total Gate Charge ³	Q_g	-	32	51	nC	$I_D=35A$ $V_{DS}=48V$ $V_{GS}=4.5V$
Gate-Source Charge	Q_{gs}	-	8	-		
Gate-Drain ("Miller") Charge	Q_{gd}	-	20	-		
Turn-on Delay Time ³	$T_{d(on)}$	-	11	-	ns	$V_{DS}=30V$ $I_D=35A$ $V_{GS}=10V$ $R_G=3.3\Omega$ $R_D=0.86\Omega$
Rise Time	T_r	-	58	-		
Turn-off Delay Time	$T_{d(off)}$	-	45	-		
Fall Time	T_f	-	80	-		
Input Capacitance	C_{iss}	-	3170	5070	pF S nA	$V_{GS}=0V$ $V_{DS}=25V$ $f=1.0MHz$
Output Capacitance	C_{oss}	-	280	-		
Reverse Transfer Capacitance	C_{rss}	-	230	-		
Gate Resistance	R_g	-	1.7	-		

Source-Drain Diode

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward On Voltage ³	V_{SD}	-	-	1.2	V	$I_S=35A, V_{GS}=0V$
Reverse Recovery Time	T_{rr}	-	50	-	ns	$I_S=35A, V_{GS}=0V$ $di/dt=100A/\mu s$
Reverse Recovery Charge	Q_{rr}	-	48	-	nC	

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

2. Staring $T_j=25^\circ C$, $V_{DD}=30V$, $L=1mH$, $R_G=25\Omega$, $I_{AS}=30A$.

3. Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

Characteristics Curve

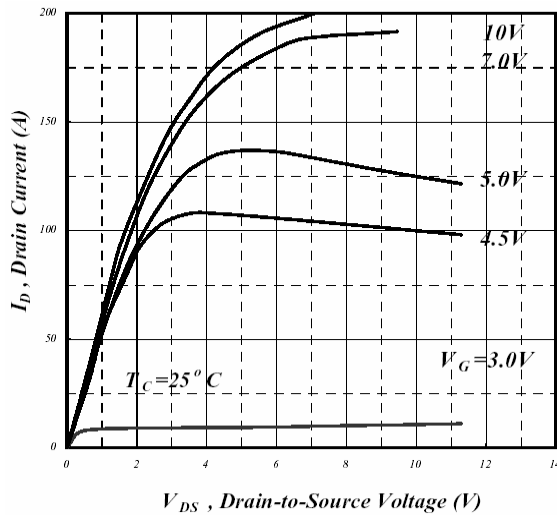


Fig 1. Typical Output Characteristics

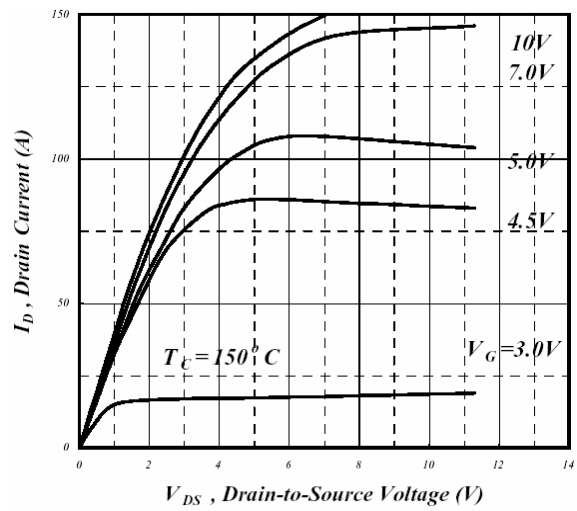


Fig 2. Typical Output Characteristics

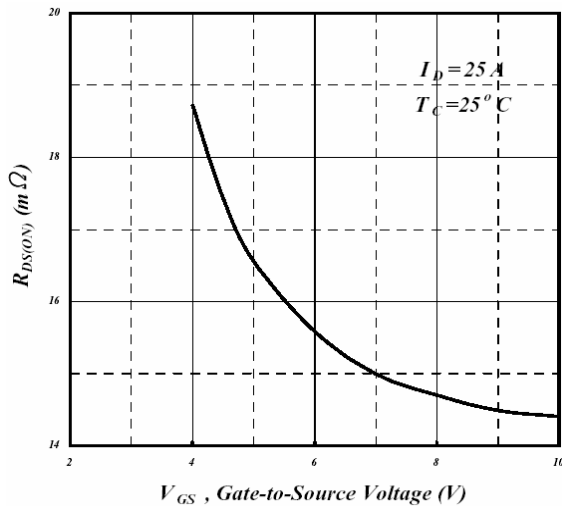


Fig 3. On-Resistance v.s. Gate Voltage

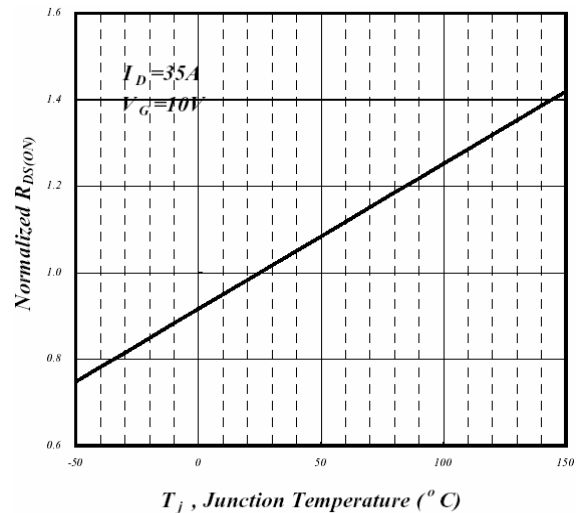


Fig 4. Normalized On-Resistance v.s. Junction Temperature

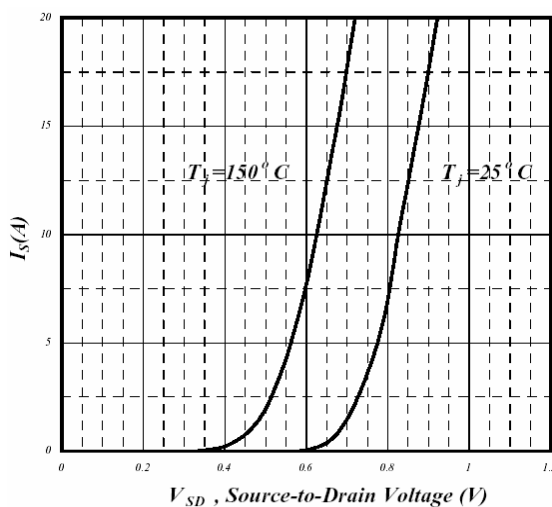


Fig 5. Forward Characteristics of Reverse Diode

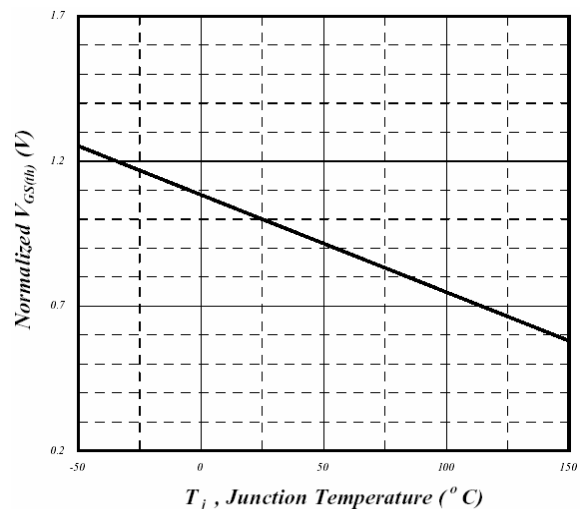
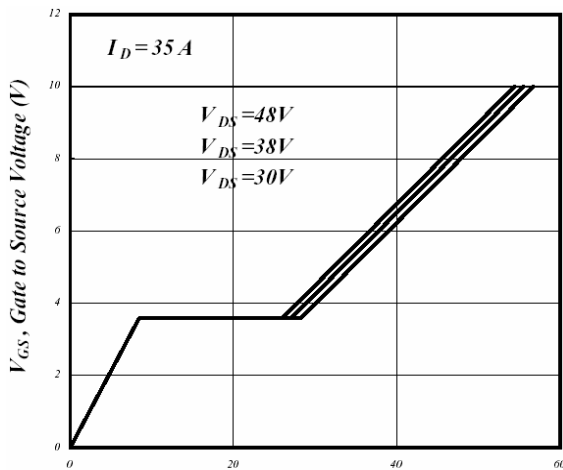
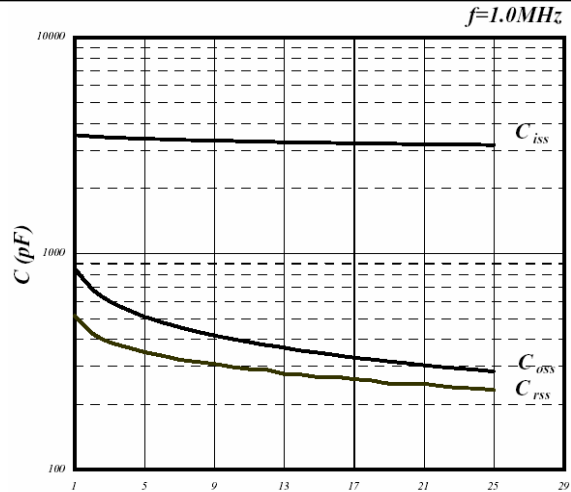


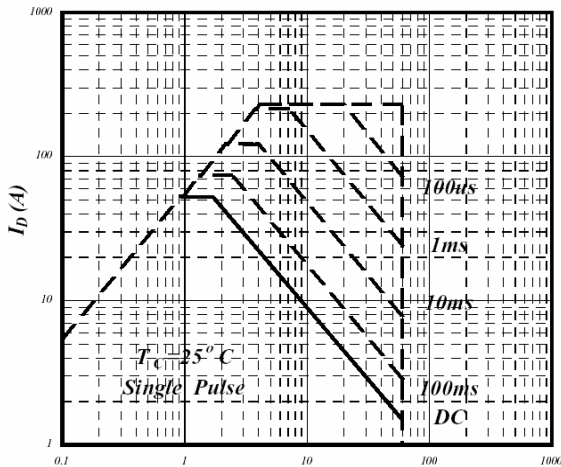
Fig 6. Gate Threshold Voltage v.s. Junction Temperature



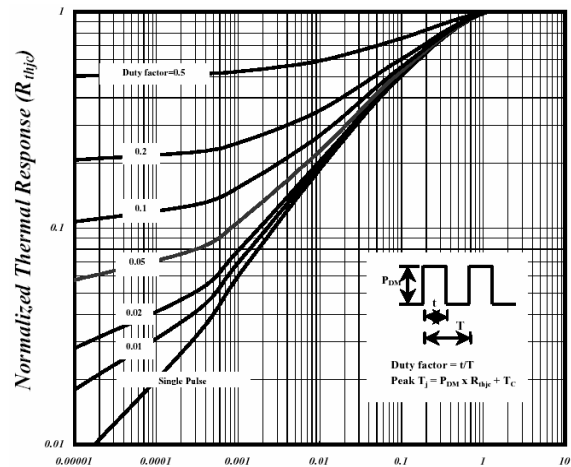
Q_G , Total Gate Charge (nC)
Fig 7. Gate Charge Characteristics



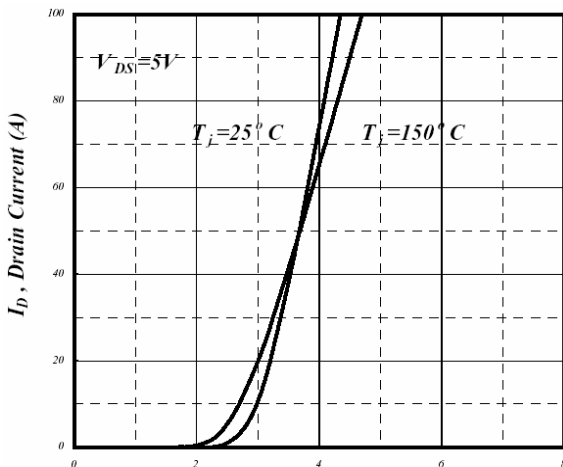
V_{DS} , Drain-to-Source Voltage (V)
Fig 8. Typical Capacitance Characteristics



V_{DS} , Drain-to-Source Voltage (V)
Fig 9. Maximum Safe Operating Area



t , Pulse Width (s)
Fig 10. Effective Transient Thermal Impedance



V_{GS} , Gate-to-Source Voltage (V)
Fig 11. Transfer Characteristics

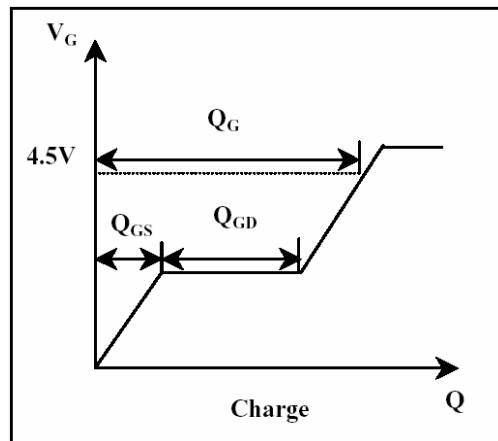


Fig 12. Gate Charge Waveform

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