

GTS6923

P-CHANNEL WITH SCHOTTKY DIODE POWER MOSFET

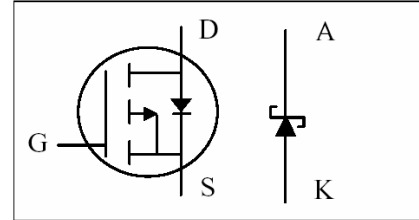
BVDSS	-20V
RDS(ON)	50mΩ
ID	-3.5A

Description

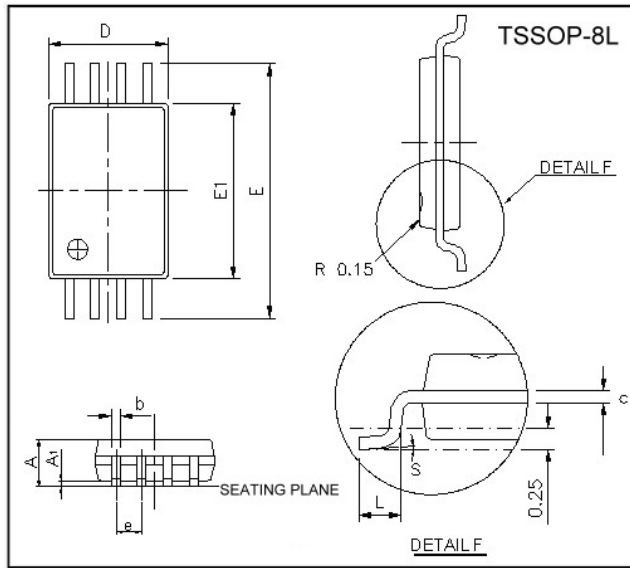
The GTS6923 provides the designer with the best combination of fast switching, ultra low on-resistance and cost-effectiveness.

Features

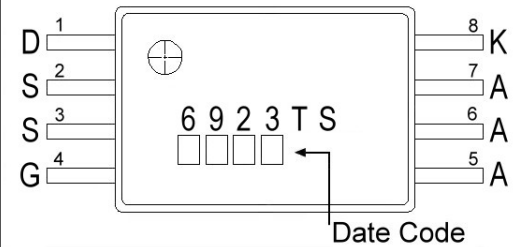
- *Low on-resistance
- *Fast Switch Characteristic
- *Included Schottky Diode



Package Dimensions



Marking :



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	-	1.20	E	6.20	6.60
A1	0.05	0.15	E1	4.30	4.50
b	0.19	0.30	e	0.65 BSC	
c	0.09	0.20	L	0.45	0.75
D	2.90	3.10	S	0°	8°

Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage (MOSFET and Schottky)	V_{DS}	-20	V
Reverse Voltage (Schottky)	V_{KA}	20	V
Gate-Source Voltage (MOSFET)	V_{GS}	±12	V
Continuous Drain Current ³ (MOSFET)	$I_D @ Ta=25^{\circ}C$	-3.5	A
Continuous Drain Current ³ (MOSFET)	$I_D @ Ta=70^{\circ}C$	-2.8	A
Pulsed Drain Current ¹ (MOSFET)	I_{DM}	-30	A
Average Forward Current (Schottky)	I_F	1	A
Pulsed Forward Current ¹ (Schottky)	I_{FM}	25	A
Total Power Dissipation (MOSFET)	$P_D @ Ta=25^{\circ}C$	1	W
Total Power Dissipation (Schottky)		1	W
Storage Temperature Range	Tstg	-55 ~ +150	°C
Operating Junction Temperature Range	Tj	-55 ~ +125	°C

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-ambient ³ (MOSFET) Max.	Rthj-a	125	°C/W
Thermal Resistance Junction-ambient ³ (Schottky) Max.			

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
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS} / \Delta T_j$	-	-0.03	-	V/°C	Reference to 25°C, I _D =-1mA
Gate Threshold Voltage	V _{GS(th)}	-0.5	-	-	V	V _{DS} =V _{GS} , I _D =-250uA
Forward Transconductance	g _{fs}	-	10	-	S	V _{DS} =-10V, I _D =-3.5A
Gate-Source Leakage Current	I _{GSS}	-	-	±100	nA	V _{GS} = ±12V
Drain-Source Leakage Current(T _j =25°C)	I _{DSS}	-	-	-1	uA	V _{DS} =-20V, V _{GS} =0
Drain-Source Leakage Current(T _j =70°C)		-	-	-25	uA	V _{DS} =-16V, V _{GS} =0
Static Drain-Source On-Resistance ²	R _{DS(ON)}	-	-	50	mΩ	V _{GS} =-4.5V, I _D =-3.5A
		-	-	85		V _{GS} =-2.5V, I _D =-2.7A
Total Gate Charge ²	Q _g	-	15.6	-	nC	I _D =-3.5A V _{DS} =-10V V _{GS} =-4.5V
Gate-Source Charge	Q _{gs}	-	2.1	-		
Gate-Drain ("Miller") Change	Q _{gd}	-	5.2	-		
Turn-on Delay Time ²	T _{d(on)}	-	8.2	-	ns	V _{DS} =-10V I _D =-1A V _{GS} =-4.5V R _G =3.3Ω R _D =10Ω
Rise Time	T _r	-	9.4	-		
Turn-off Delay Time	T _{d(off)}	-	66.4	-		
Fall Time	T _f	-	48	-		
Input Capacitance	C _{iss}	-	660	-	pF	V _{GS} =0V V _{DS} =-20V f=1.0MHz
Output Capacitance	C _{oss}	-	285	-		
Reverse Transfer Capacitance	C _{rss}	-	130	-		

Source-Drain Diode

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward On Voltage ²	V _{SD}	-	-	-1.2	V	I _S =-0.83A, V _{GS} =0V
Continuous Source Current(Body Diode)	I _S	-	-	-0.83	A	V _D = V _G =0V, V _S =-1.2V

Schottky Characteristics @ T_j=25°C

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward Voltage Drop	V _F	-	-	0.5	V	I _F =1A
Max. Reverse Leakage Current	I _{RM}	-	-	100	uA	V _R =20V

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; 208°C/W when mounted on Min. copper pad.

MOSFET Characteristics Curve

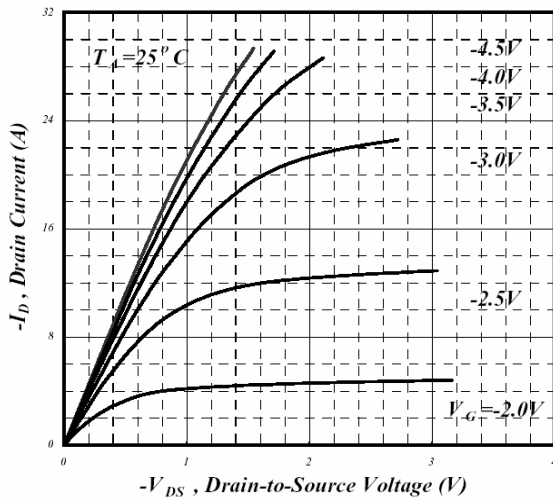


Fig 1. Typical Output Characteristics

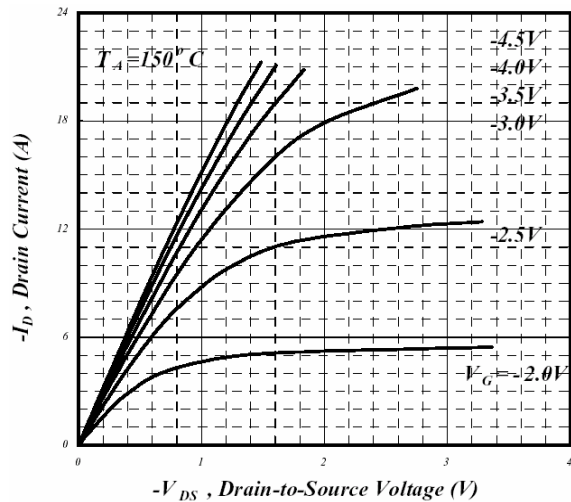


Fig 2. Typical Output Characteristics

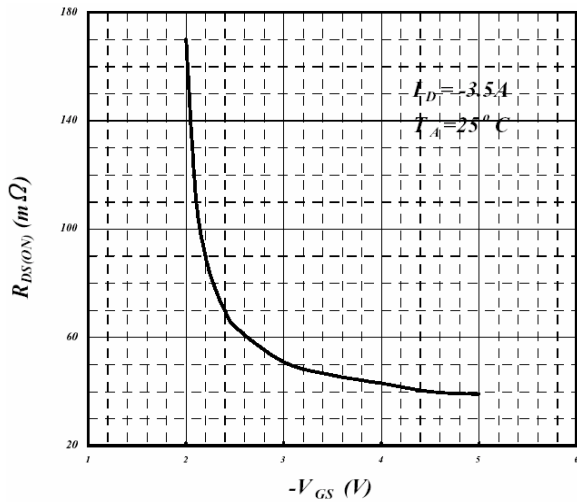


Fig 3. On-Resistance v.s. Gate Voltage

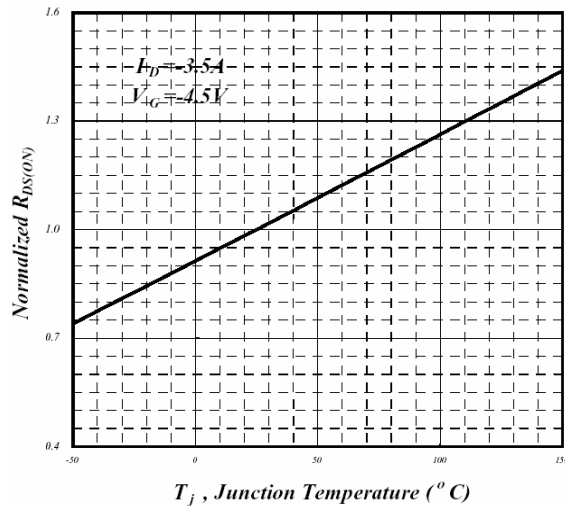


Fig 4. Normalized On-Resistance v.s. Junction Temperature

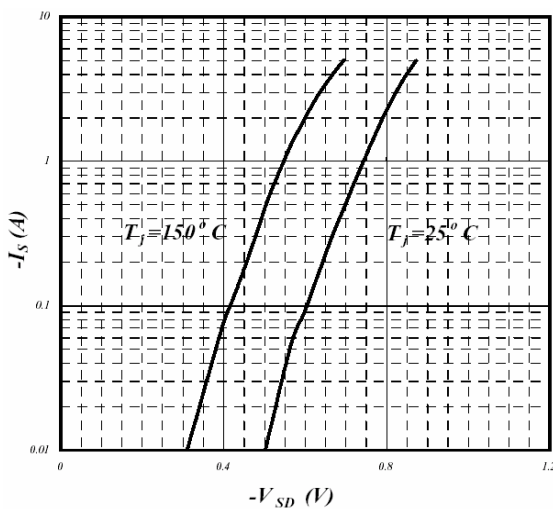


Fig 5. Forward Characteristics of Reverse Diode

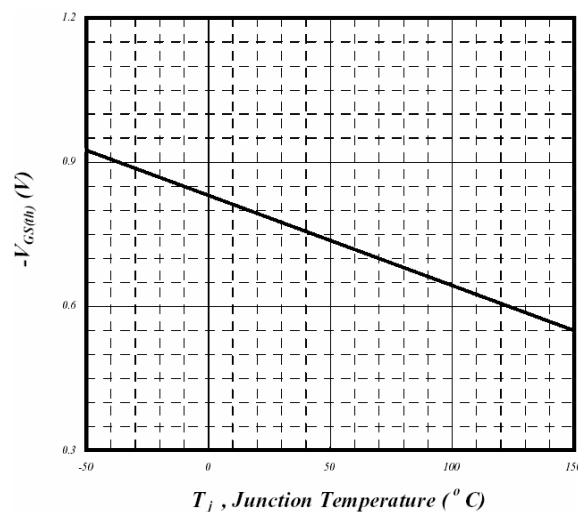


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

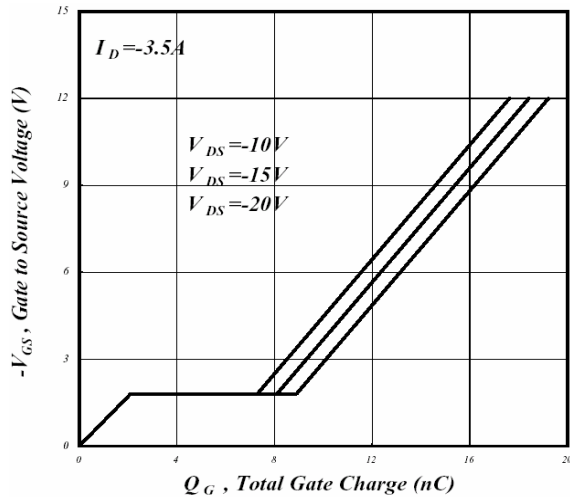


Fig 7. Gate Charge Characteristics

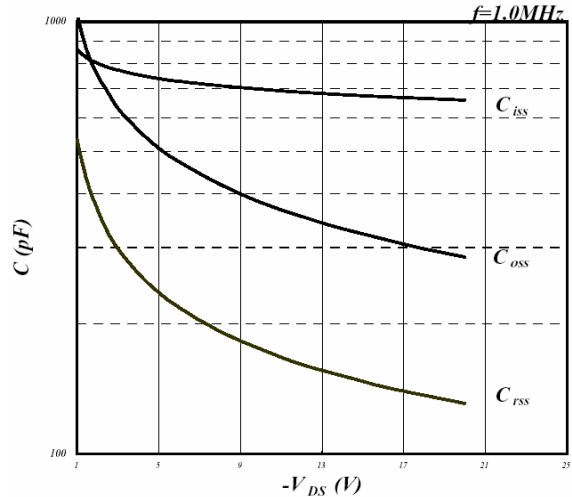


Fig 8. Typical Capacitance Characteristics

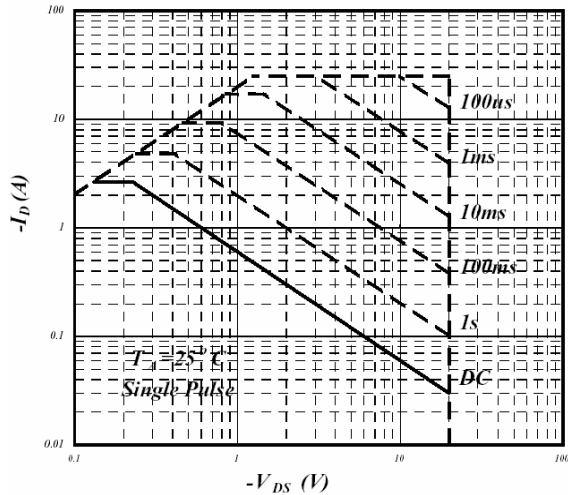


Fig 9. Maximum Safe Operating Area

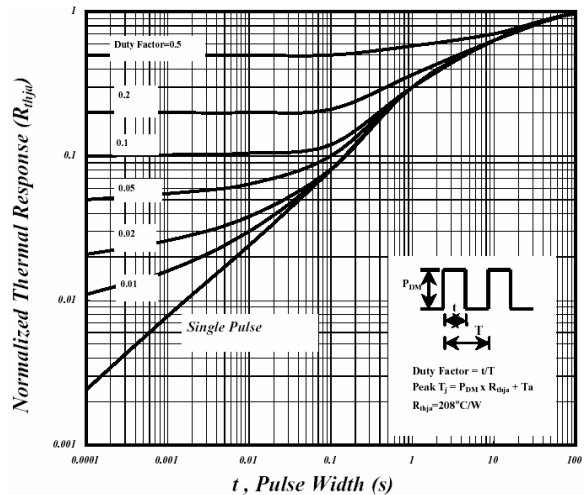


Fig 10. Effective Transient Thermal Impedance

SCHOTTKY DIODE

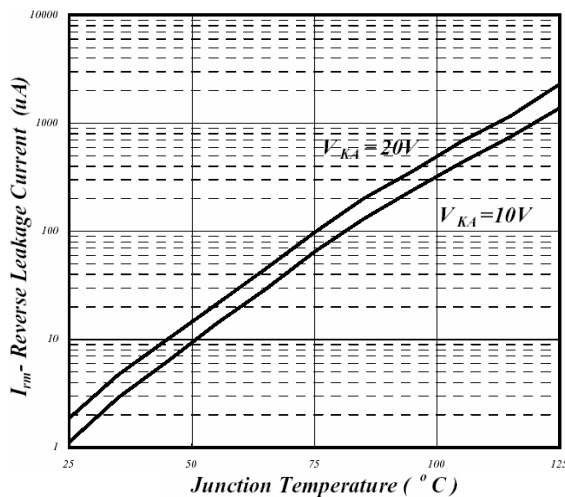


Fig 1. Reverse Leakage Current v.s. Junction Temperature

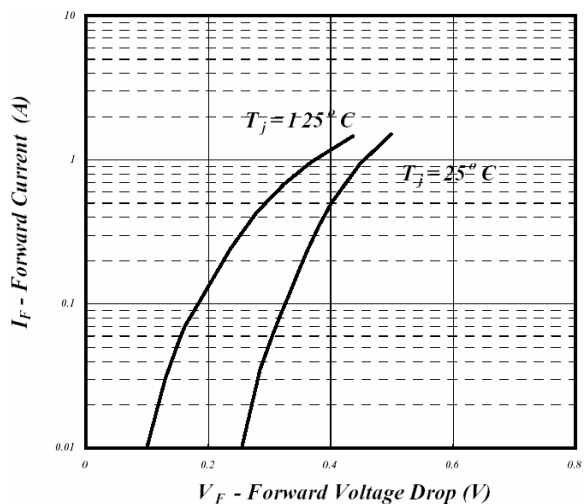


Fig 2. Forward Voltage Drop

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