

GT6924E

N-CHANNEL MOSFET WITH SCHOTTKY DIODE

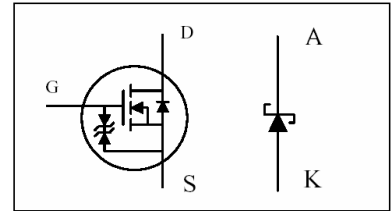
BVDSS	20V
RDS(ON)	600mΩ
ID	1A

Description

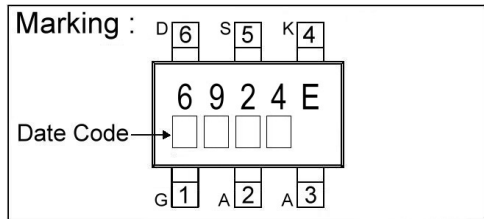
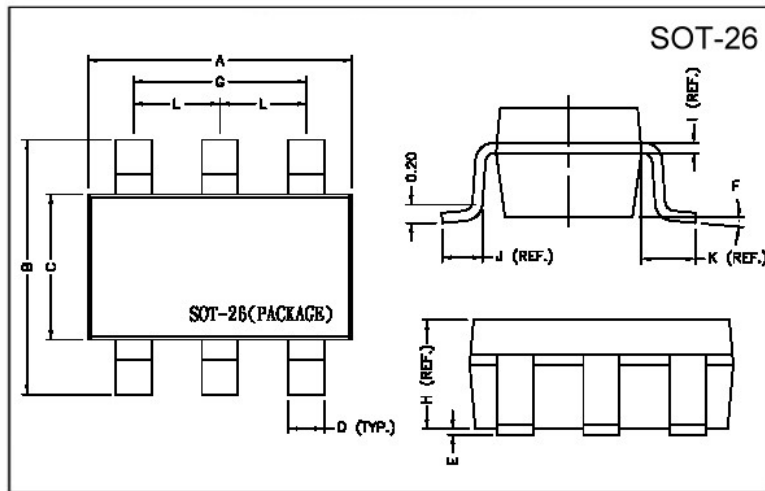
The GM2306 provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness.

Features

- *Lower on-resistance
- *Fast Switching Characteristic
- *Included Schottky Diode



Package Dimensions



REF.	Millimeter		REF.	Dimensions
	Min.	Max.		Millimeter
A	2.70	3.10	G	1.90 REF.
B	2.60	3.00	H	1.20 REF.
C	1.40	1.80	I	0.12 REF.
D	0.30	0.55	J	0.37 REF.
E	0	0.10	K	0.60 REF.
F	0°	10°	L	0.95 REF.

Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage (MOSFET)	V_{DS}	20	V
Gate-Source Voltage (MOSFET)	V_{GS}	± 6	V
Continuous Drain Current ³ (MOSFET)	$I_D @ TA=25^\circ C$	1.0	A
Continuous Drain Current ³ (MOSFET)	$I_D @ TA=70^\circ C$	0.8	A
Pulsed Drain Current ¹ (MOSFET)	I_{DM}	8	A
Reverse Voltage (Schottky)	V_{KA}	20	V
Average Forward Current (Schottky)	I_F	0.5	A
Pulsed Forward Current ¹ (Schottky)	I_{FM}	2.0	A
Total Power Dissipation (MOSFET)	$P_D @ TA=25^\circ C$	0.9	W
Total Power Dissipation (Schottky)		0.9	W
Operating Junction and Storage Temperature Range	T_j, T_{stg}	-55 ~ +125	$^\circ C$

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-ambient ³ (MOSFET) Max.	R_{thj-a}	110	$^\circ C/W$
Thermal Resistance Junction-ambient ³ (Schottky) Max.		110	$^\circ C/W$

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV _{DSS}	20	-	-	V	V _{GS} =0, I _D =250uA
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS} / \Delta T_j$	-	0.02	-	V/°C	Reference to 25°C, I _D =1mA
Gate Threshold Voltage	V _{GS(th)}	0.5	-	1.2	V	V _{DS} =V _{GS} , I _D =250uA
Forward Transconductance	g _{fs}	-	1	-	S	V _{DS} =5V, I _D =600mA
Gate-Source Leakage Current	I _{GSS}	-	-	±10	uA	V _{GS} = ± 6V
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)		-	-	10	uA	V _{DS} =16V, V _{GS} =0
Static Drain-Source On-Resistance	R _{DS(ON)}	-	-	600	mΩ	V _{GS} =4.5V, I _D =1A
		-	-	850		V _{GS} =2.5V, I _D =0.5A
Total Gate Charge ²	Q _g	-	1.3	2	nC	I _D =600mA V _{DS} =16V V _{GS} =4.5V
Gate-Source Charge	Q _{gs}	-	0.3	-		
Gate-Drain ("Miller") Charge	Q _{gd}	-	0.5	-		
Turn-on Delay Time ²	T _{d(on)}	-	21	-	Ns	V _{DS} =10V I _D =600mA V _{GS} =5V R _G =3.3Ω R _D =16.7Ω
Rise Time	T _r	-	53	-		
Turn-off Delay Time	T _{d(off)}	-	100	-		
Fall Time	T _f	-	125	-		
Input Capacitance	C _{iss}	-	38	60	pF	V _{GS} =0V V _{DS} =10V f=1.0MHz
Output Capacitance	C _{oss}	-	17	-		
Reverse Transfer Capacitance	C _{rss}	-	12	-		

Source-Drain Diode

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward On Voltage ²	V _{SD}	-	-	1.2	V	I _S =750mA, V _{GS} =0V

Schottky Characteristics (T_j = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward Voltage Drop	V _F	-	-	0.5	V	I _F =500mA
Maximum Reverse Leakage Current	I _{RM}	-	-	100	uA	V _R =20V
Junction Capacitance	C _T	-	21	-	pF	V _R =10V

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.

MOSFET Characteristics Curve

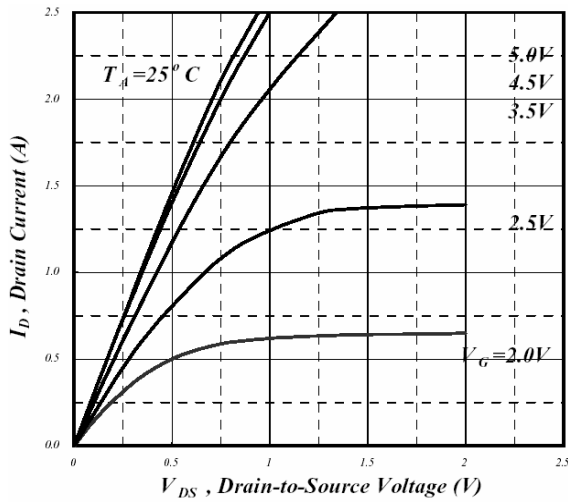


Fig 1. Typical Output Characteristics

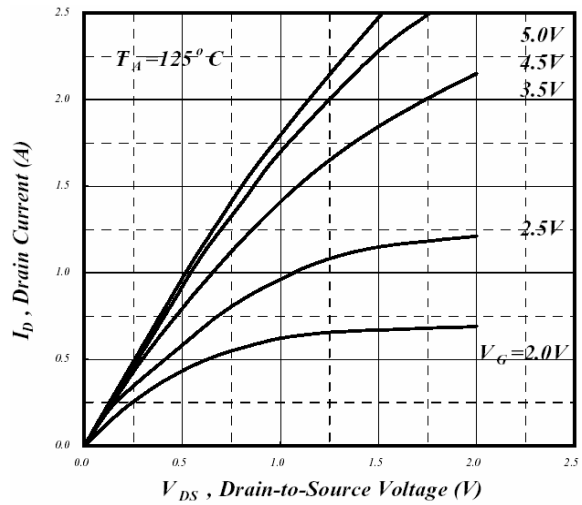


Fig 2. Typical Output Characteristics

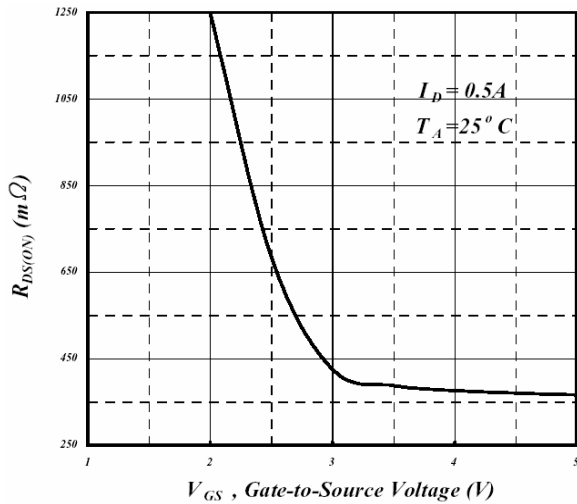


Fig 3. On-Resistance v.s. Gate Voltage

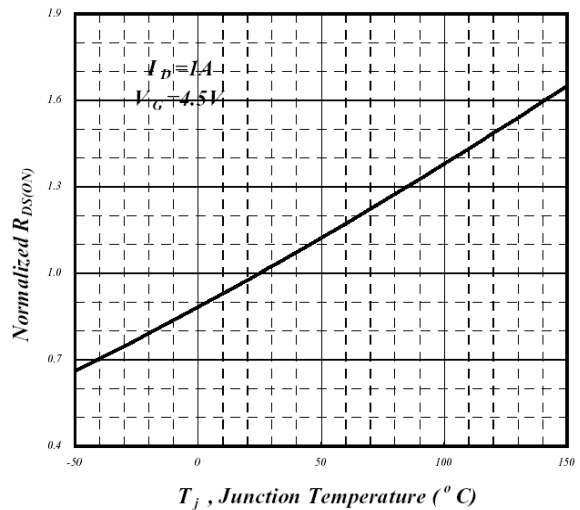


Fig 4. Normalized On-Resistance v.s. Junction Temperature

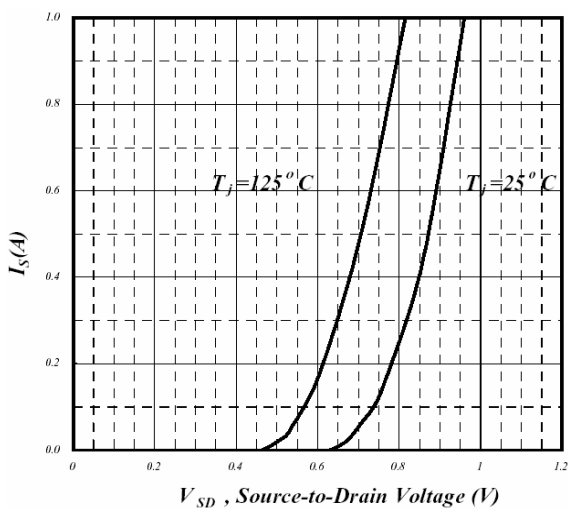


Fig 5. Forward Characteristics of Reverse Diode

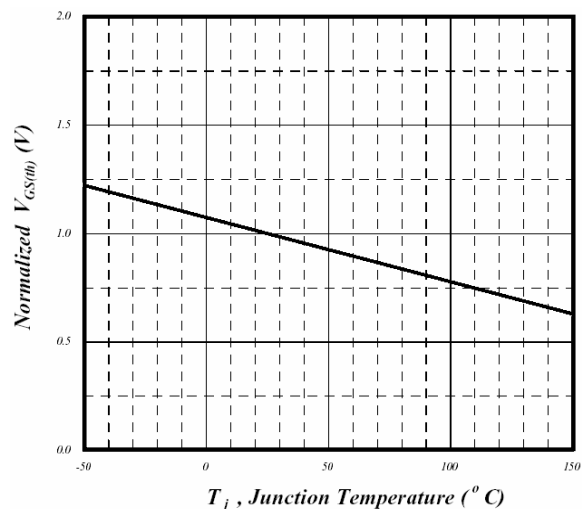


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

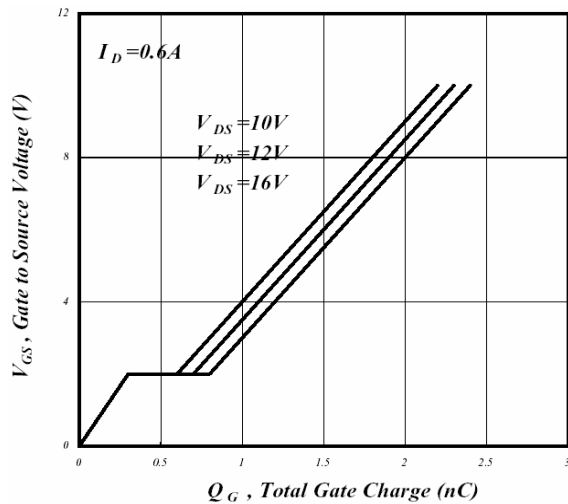


Fig 7. Gate Charge Characteristics

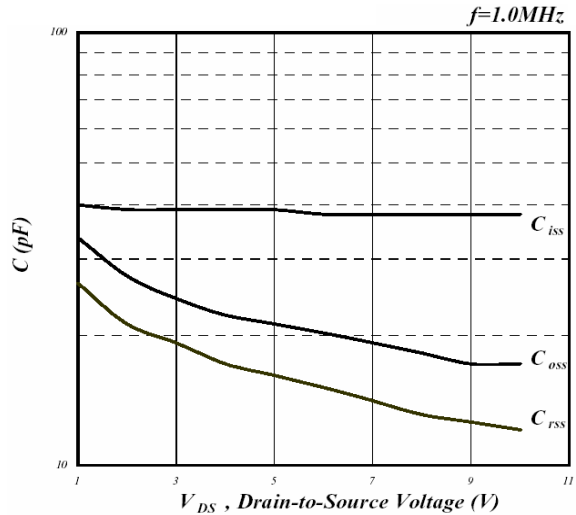


Fig 8. Typical Capacitance Characteristics

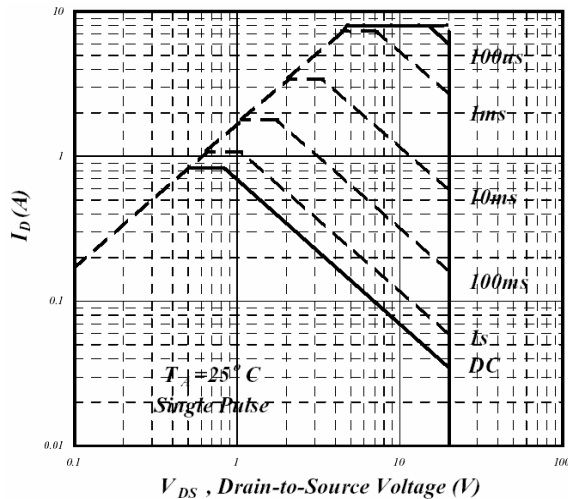


Fig 9. Maximum Safe Operating Area Schottky Diode Characteristics Curve

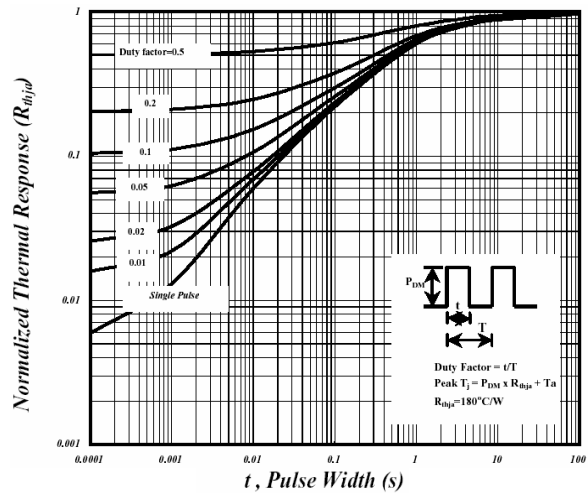


Fig 10. Effective Transient Thermal Impedance

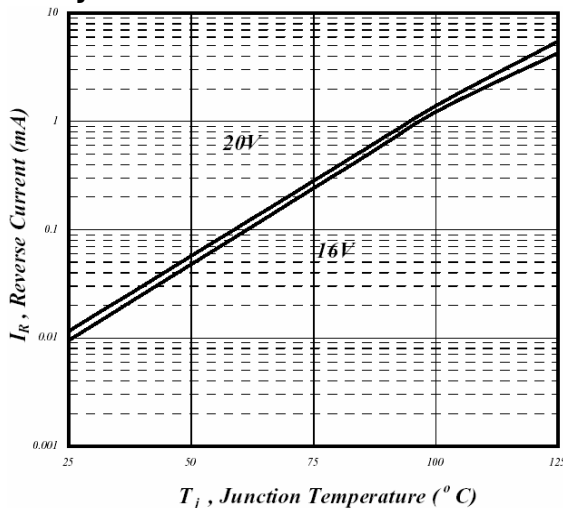


Fig 11. Reverse Leakage Current v.s. Junction Temperature

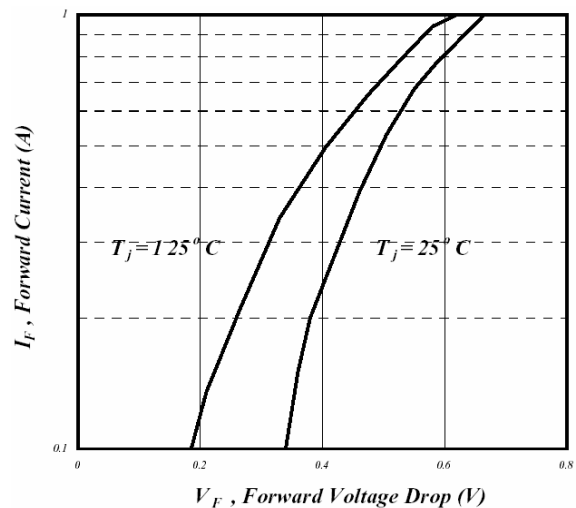


Fig 12. Forward Voltage Drop

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