



HY3402

N-CHANNEL MOSFET

4A, 30V N-CHANNEL ENHANCEMENT MODE POWER MOSFET

DESCRIPTION

The HY3402 is N-channel enhancement mode power MOSFET, which provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltage as low as 2.5V. this device is suitable for use as load switch and in PWM applications.

The HY3402 meet the ROHS and Green Product requirement with full function reliability approved.

FEATURES

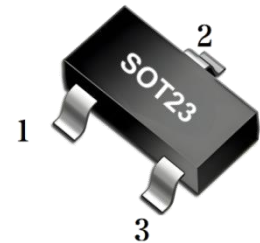
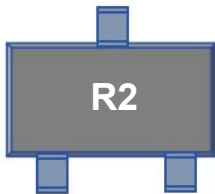
- * Lead free product is acquired
- * Surface mount package

APPLICATION

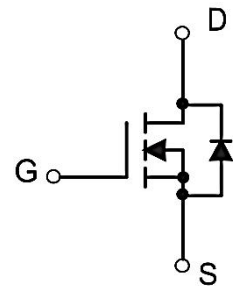
- * Load Switch and in PWM applications

MARKING

Type Code: Marking: R2



Equivalent Circuit



ABSOLUTE MAXIMUM RATINGS(TA=25°C, unless otherwise specified.)

SYMBOL	PARAMETER	VALUE	UNIT
VDS	Drain-Source Voltage	30	V
VGS	Gate Source Voltage	±12	V
ID	Continuous Drain Current	4	A
IDM	Pulsed Drain Current (note 1)	15	A
PD	Power Dissipation	0.35	W
TJ	Junction Temperature	150	°C
TSTG	Storage Temperature	-55~150	°C
RθJA	Thermal Resistance From Junction To Ambient(Note 2)	357	°C/W

Notes: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.



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■ ELECTRICAL CHARACTERISTICS (TA=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
STATIC CHARACTERISTICS						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	30			V
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 12V, V_{DS}=0V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=24V, V_{GS}=0V$			1	μA
Gate threshold voltage(Note 3)	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.6	0.85	1.4	V
Drain-source on-state resistance(Note 3)	$R_{DS(on)}$	$V_{GS}=10V, I_D=4A$		33	55	m Ω
		$V_{GS}=4.5V, I_D=3A$		39	70	
		$V_{GS}=2.5V, I_D=2A$		48	110	
Diode forward voltage (note 3)	V_{SD}	$V_{GS}=0V, I_S=1A$			1	V
Forward tranconductance(Note 3)	g_{FS}	$V_{DS}=15V, I_D=4A$		8		S
DYNAMIC CHARACTERISTICS (Note 4)						
Input Capacitance	C_{ISS}	$V_{GS}=0V, V_{DS}=15V, f=1MHz$		390		pF
Output Capacitance	C_{OSS}			54.5		
Reverse Transfer Capacitance	C_{RSS}			41		
Gate resistance	R_g	$V_{DS}=0V, V_{GS}=0V, f=1MHz$		3		Ω
SWICHING CHARACTERISTICS (Note 4)						
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=15V, R_L=3.75\Omega,$ $V_{GS}=10V, R_{GEN}=6\Omega$		3.3		ns
Turn-On Rise Time	t_r			1		
Turn-Off Delay Time	$t_{d(off)}$			21.7		
Turn-Off Fall Time	t_f			2.1		
Total gate charge	Q_g	$V_{DS}=15V, V_{GS}=4.5V, I_D=4A$		4.34		nC
Gate-source Charge	Q_{gs}			0.6		nC
Gate-drain Charge	Q_{gd}			1.38		nC
Body diode reverse recovery time	t_r	$I_F=4A, dI/dt=100A/\mu s$		1.2		ns
Body diode reverse recovery charge	Q_{rr}			6.3		nC

Notes:

1. Repetitive rating : Pulse width limited by junction temperature.
2. Surface mounted on FR4 board , $t \leq 10s$.
3. Pulse Test : Pulse Width $\leq 80\mu s$, Duty Cycle $\leq 0.5\%$.
4. Guaranteed by design, not subject to producing.

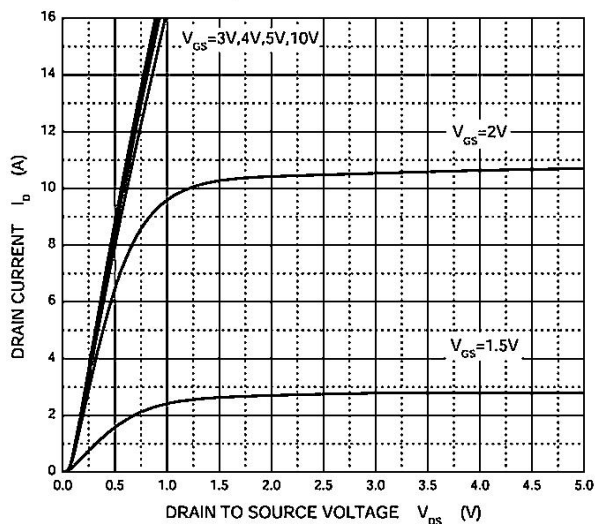


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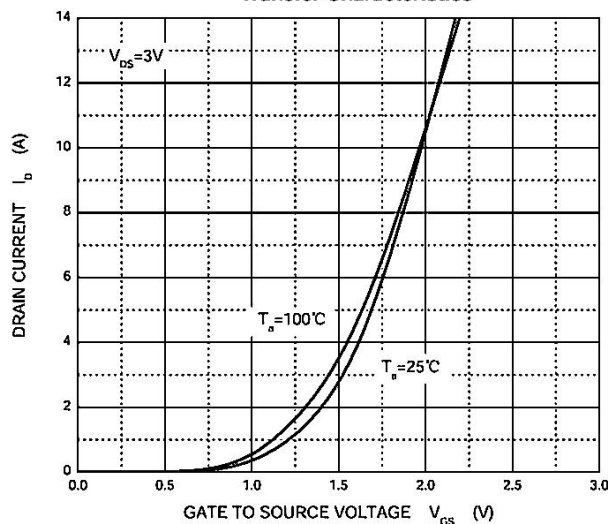
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TYPICAL CHARACTERISTICS

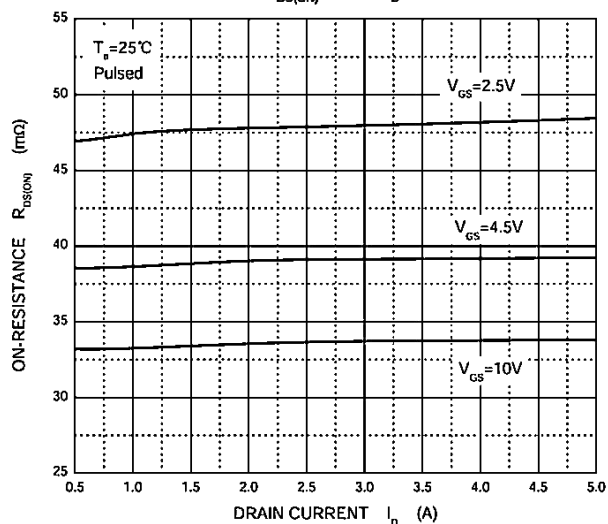
Output Characteristics



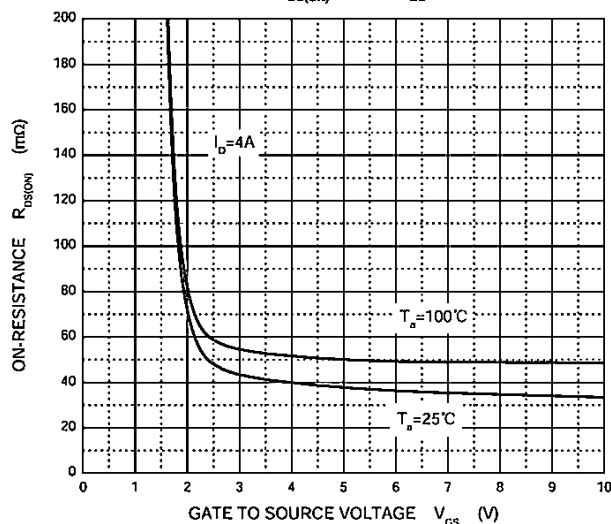
Transfer Characteristics



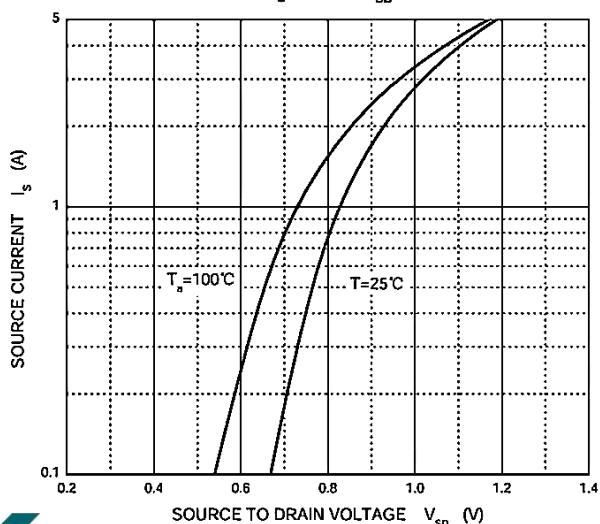
$R_{DS(ON)}$ — I_D



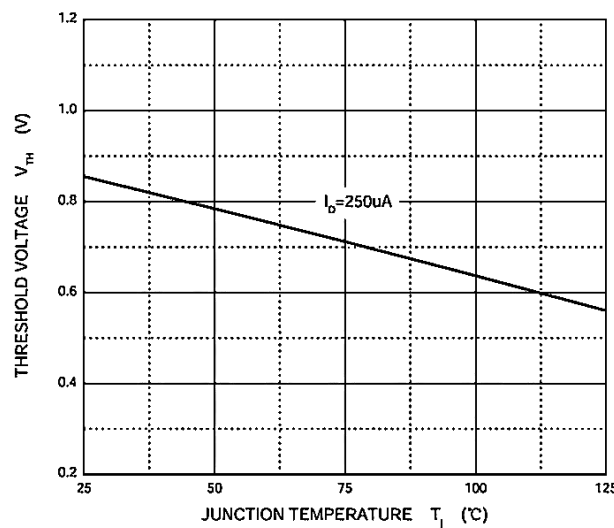
$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}



Threshold Voltage

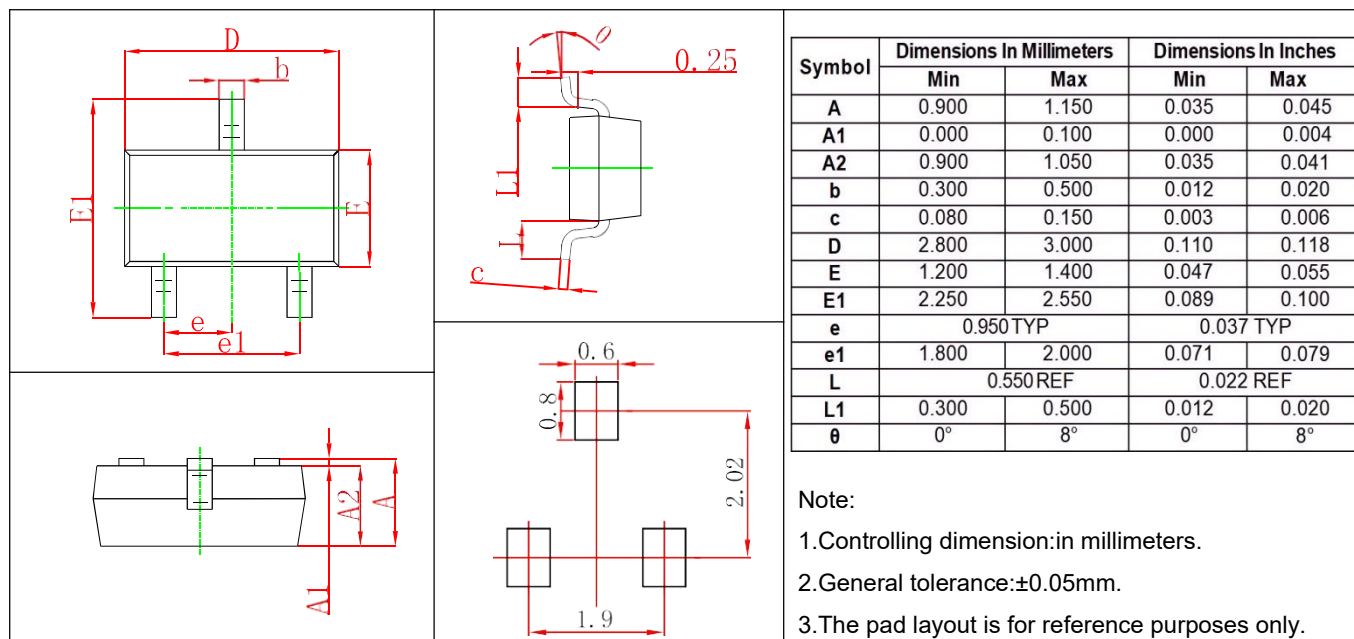




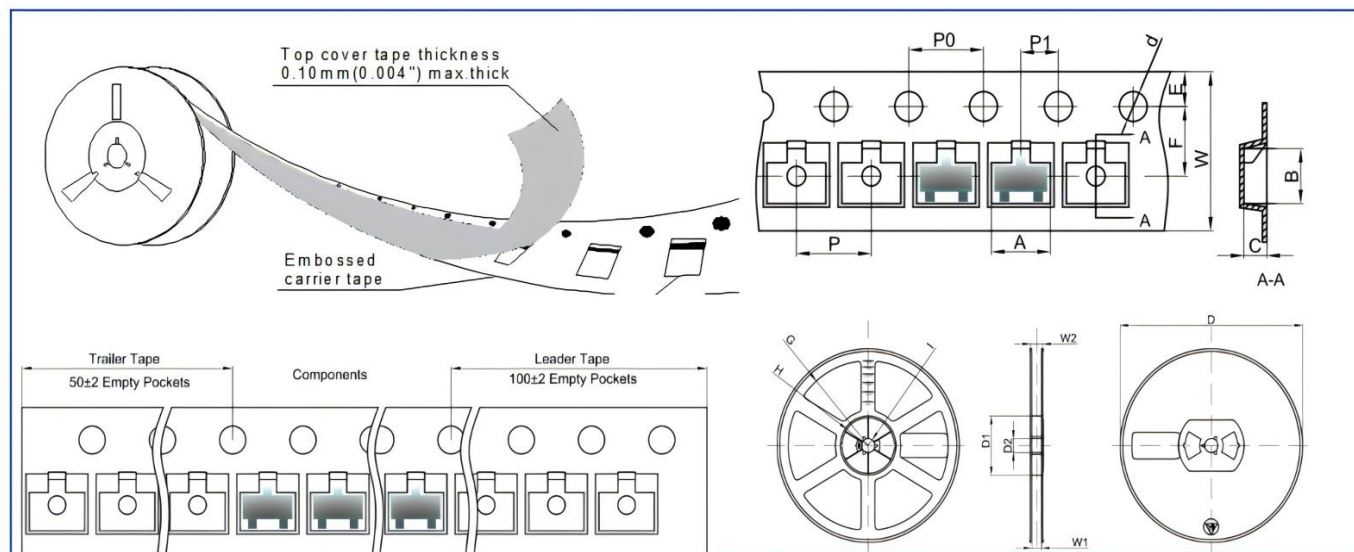
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SOT23 PACKAGE OUTLINE DIMENSIONS



REEL PACKING



Dimensions are in millimeter

PKG TYPE	A	B	C	d	E	F	Po	P	P1	W
SOT-23	3.15	2.77	1.22	Φ1.50	1.75	3.50	4.00	4.00	2.00	8.00
Reel Option	D	D1	D2	G	H	I	W1	W2	Q.TY PER REEL	
7" Dia	Φ178.0	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30	3000PCS	
13" Dia	Φ330.0	/	13.00	/	/	R6.50	9.50	12.30	10000PCS	