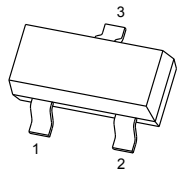
AO3400

SOT-23 Plastic-Encapsulate MOSFETS

30V N-Channel Enhancement Mode Field Effect Transistor

$V_{(BR)DSS}$	$R_{DS(on)}$Typ	I_D
30 V	27mΩ @ 4.5V	5.8A
	29mΩ @ 3.3V	

SOT-23



1. GATE
2. SOURCE
3. DRAIN

FEATURE

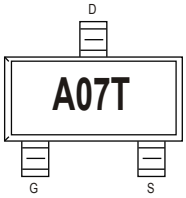
High dense cell design for extremely low RDS(ON)

Exceptional on-resistance and maximum DC current capability

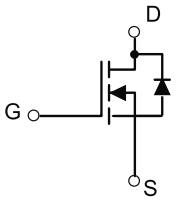
APPLICATION

- Load Switch for Portable Devices
- DC/DC Converter

MARKING



Equivalent circuit



PACKAGE SPECIFICATIONS

Package	Reel Size	Reel DIA. (mm)	Q'TY/Reel (pcs)	Box Size (mm)	QTY/Box (pcs)	Carton Size (mm)	Q'TY/Carton (pcs)
SOT-23	7'	330	3000	203×203×195	45000	438×438×220	180000

MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	30	V
Gate-Source Voltage		V_{GS}	±12	
Continuous Drain Current	T_A=25℃	I_D	5.8	A
	T_A=70℃		4.6	
Maximum Power Dissipation [2]	T_A=25℃	P_D	1.5	W
	T_A=70℃		0.9	
Pulsed Drain Current [1]		I_{DM}	23	A
Operating Junction and Storage Temperature Range		T_J	150	°C
Storage Temperature Range		T_{stg}	-50 to 150	°C
Thermal Resistance Junction-Ambient		$R_{\theta JA}$	100	°C/W

Notes

1) Pulse width limited by maximum junction temperature.
2) Surface Mounted on FR4 Board, t ≤ 5 sec.
3) The above data are for reference only.

DN:T20321A0

MOSFET ELECTRICAL CHARACTERISTICS

T_a=25℃ unless otherwise specified

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
Off Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250uA	30			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =24V,V_{GS} = 0V			1	uA
	I_{DSS}	V_{DS} =24V,V_{GS} = 0V,Tj=125℃			100	uA
Gate-source leakage current	I_{GSS}	V_{GS} =±12V, V_{DS} = 0V			±100	nA
On characteristics						
Drain-source on-resistance (note 3)	$R_{DS(on)}$	V_{GS} =4.5V, I_D =5.8A		27	32	mΩ
		V_{GS} =3.3V, I_D =4A		29	45	mΩ
		V_{GS} =2.5V, I_D=2A		35	50	mΩ
Forward tranconductance	g_{FS}	V_{DS} =5V, I_D =5A	8			S
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250uA	0.5	0.8	1.2	V
Dynamic Characteristics (note 4)						
Input capacitance	C_{iss}	V_{DS} =15V,V_{GS} =0V,f =1MHz		635		pF
Output capacitance	C_{oss}			135		pF
Reverse transfer capacitance	C_{rss}			40		pF
Total Gate Charge	Q_g	V_{DS}=15V I_D=5A, V_{GS}=4.5V		10.5		nC
Gate Source Charge	Q_{gs}			1.6		nC
Gate Drain Charge	Q_{gd}			2.7		nC
Switching Characteristics (note 4)						
Turn-on delay time	$t_{d(on)}$	V_{DD}=15V, I_D=5A, R_G=3.3Ω, V_{GS}=4.5V		7.5		ns
Turn-on rise time	t_r			18		ns
Turn-off delay time	$t_{d(off)}$			36		ns
Turn-off fall time	t_f			5		ns
Drain-source diode characteristics and maximum ratings						
Source drain current(Body Diode)	I_{SD}	T_A=25℃			1.5	A
Diode forward voltage (note 3)	V_{SD}	I_S=3A,V_{GS}=0V		0.82	1.2	V

Note :

1. Repetitive Rating : Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t≤5 sec.
3. Pulse Test : Pulse Width≤300μs, Duty Cycle≤ 2%.
4. Guaranteed by design, not subject to production testing.

Typical Characteristics

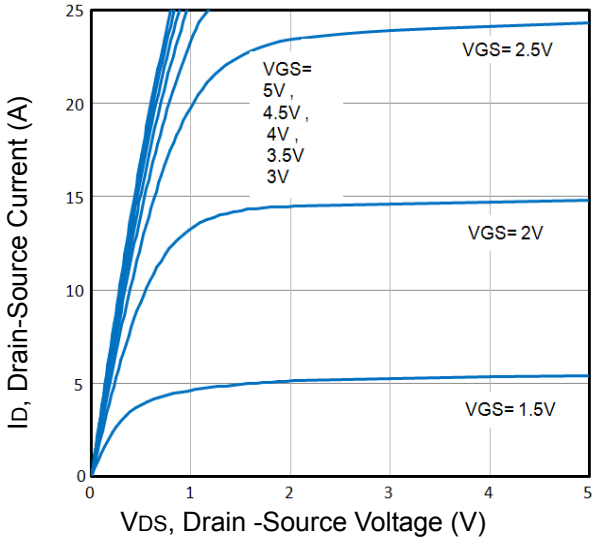


Fig1. Typical Output Characteristics

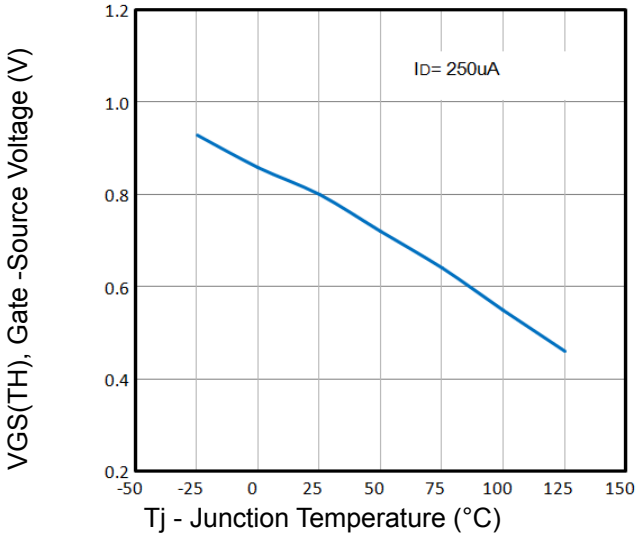


Fig2. Normalized Threshold Voltage Vs. Temperature

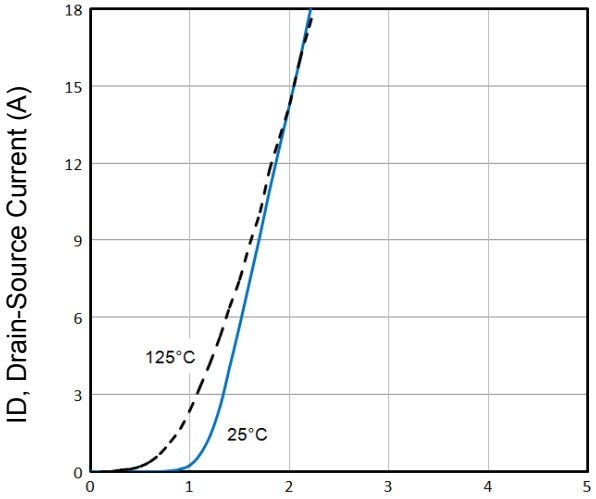


Fig3. Typical Transfer Characteristics

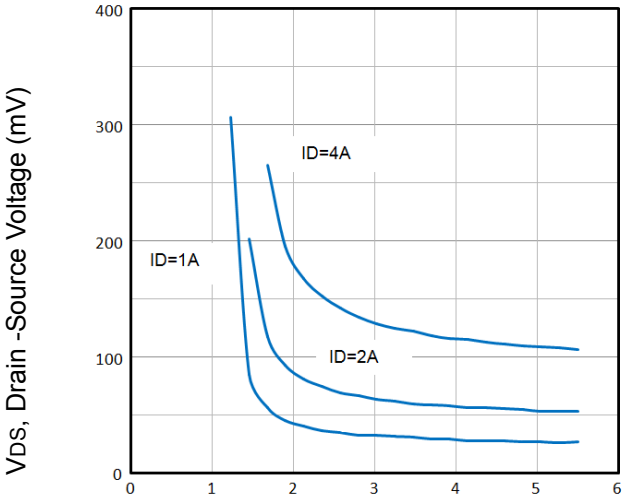


Fig4. Drain -Source Voltage vs Gate -Source Voltage

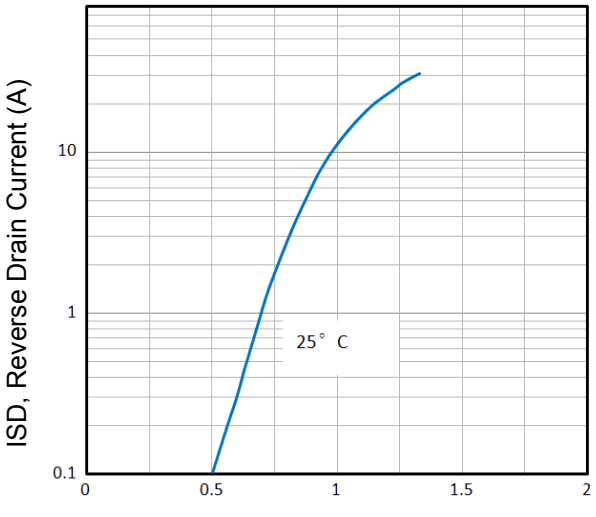


Fig5. Typical Source-Drain Diode Forward Voltage

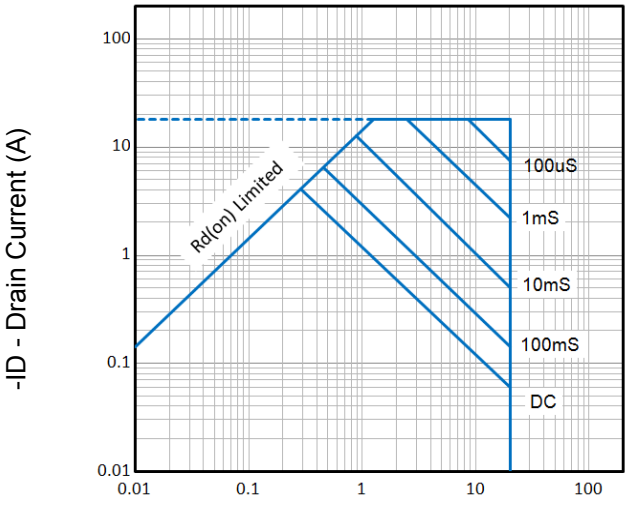


Fig6. Maximum Safe Operating Area

The curve above is for reference only.

Typical Characteristics

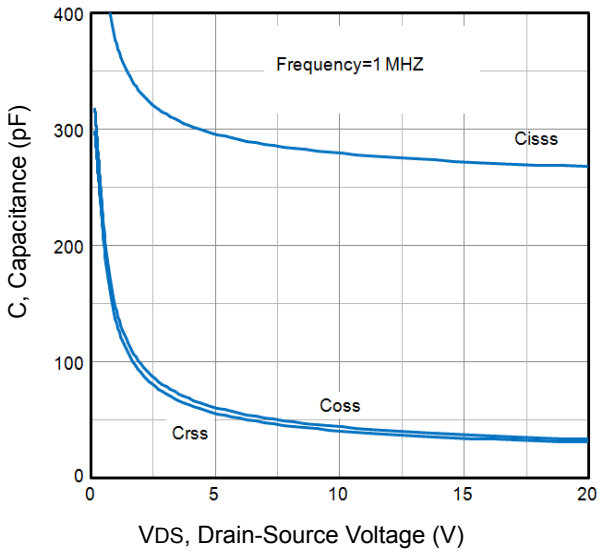


Fig7. Typical Capacitance Vs. Drain-Source Voltage

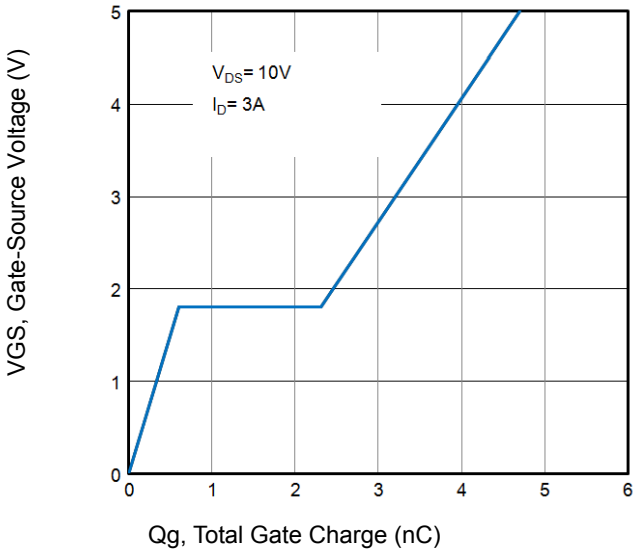


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

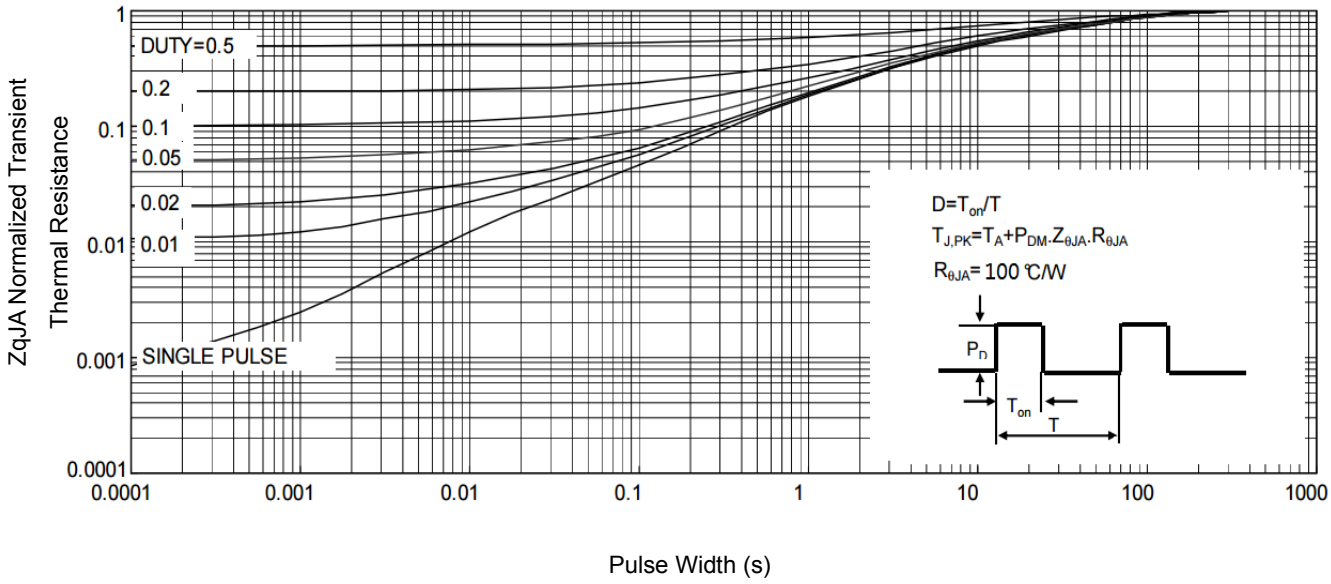


Fig9. Normalized Maximum Transient Thermal Impedance

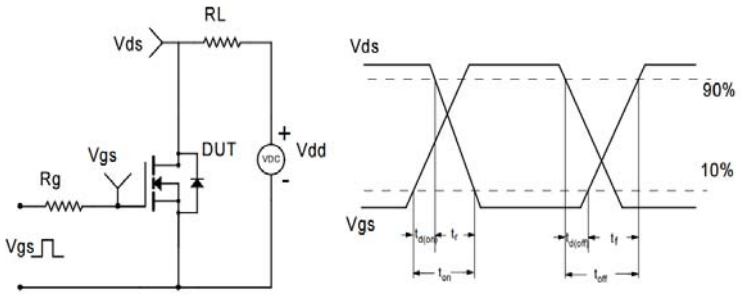
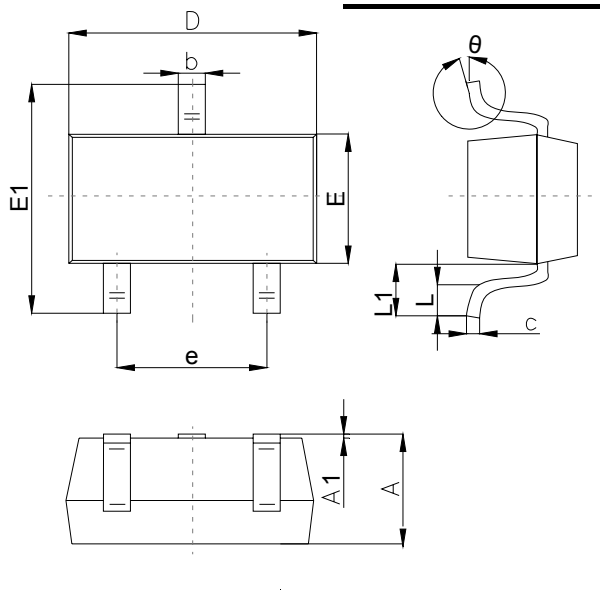


Fig10. Switching Time Test Circuit and waveforms

The curve above is for reference only.

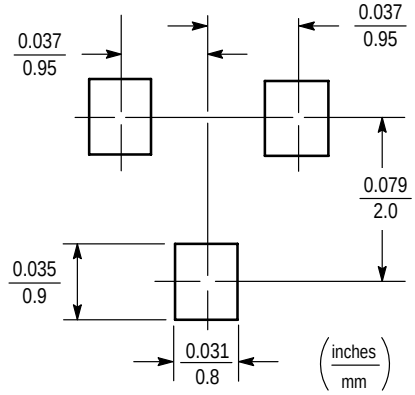
Outlitne Drawing

SOT-23 Package Outline Dimensions



Symbol	Dimensions In Millimeters		
	Min	Typ	Max
A	0.90		1.40
A1	0.00		0.10
b	0.30		0.50
c	0.08		0.20
D	2.80	2.90	3.10
E	1.20		1.60
E1	2.25		2.80
e	1.80	1.90	2.00
L	0.10		0.50
L1	0.4		0.55
θ	0°		10°

Suggested Pad Layout



Note:
1.Controlling dimension:in/millimeters.
2.General tolerance: ±0.05mm.
3.The pad layout is for reference purposes only.