

N-Channel 30-V (D-S) MOSFET

FEATURES

- Low $R_{DS(on)}$ Provides Higher Efficiency and Extends Battery Life
- Low thermal impedance copper leadframe SOT23 saves board space
- Lower gate charge
- Fast switching speed
- High performance trench technology

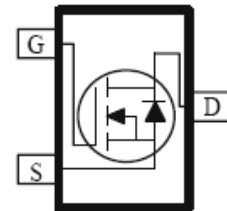
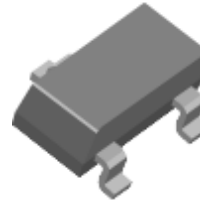
Product Summary

MOSFET		
$V_{DS}(V)$	$R_{DS(on)} (m\Omega)$	$I_D (A)$
30 V	41 @ $V_{GS} = 10 V$	5.8
	45 @ $V_{GS} = 4.5 V$	5.0

Description

These miniature surface mount MOSFETs utilize High Cell Density process. Low $R_{DS(on)}$ assures minimal power loss and conserves energy, making this device ideal for use in power management circuitry. Typical applications are DC-DC converters, power management in portable and battery-powered products such as computers, printers, battery charger, telecommunication power system, and telephones power system.

SOT23



Maximum Ratings (TA = 25 °C UNLESS OTHERWISE NOTED)

Symbol	Parameter	Maximum	Unit	
V_{DS}	Drain-Source Voltage	30	V	
V_{GS}	Gate-Source Voltage	± 12		
I_D	Continuous Drain Current ^a	$T_A=25^\circ C$	5.8	A
		$T_A=70^\circ C$	4.9	
I_{DM}	Pulsed Drain Current ^b	30		
I_S	Continuous Source Current (Body Diode) ^a	2.5	A	
P_D	Power Dissipation ^a	$T_A=25^\circ C$	350	mW
$R_{\theta JA}$	Maximum Junction-to-Ambient ^a	357	$^\circ C/W$	
T_J, T_{stg}	Operation Junction and Storage Temperature Range	-55 to 150	$^\circ C$	

Notes:

- Surface Mounted on 1" x 1" FR4 Board.
- Pulse width limited by maximum junction temperature



Electrical Characteristics

SPECIFICATIONS (TA = 25°C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Limits			Unit
			Min	Typ	Max	
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	30			V
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.7		1.4	V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 12V$			± 100	nA
Drain-Source Leakage Current	I_{DSS}	$V_{DS} = 24V, V_{GS} = 0V$ $T_J = 25^\circ C$			1	uA
		$V_{DS} = 24V, V_{GS} = 0V,$ $T_J = 55^\circ C$			5	
Drain-Source On-Resistance ^a	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 5.8A$			41	mΩ
		$V_{GS} = 4.5V, I_D = 5.0A$			45	
		$V_{GS} = 2.5V, I_D = 4.0A$			59	
Forward Transconductance ^a	g_{fs}	$V_{DS} = 5V, I_D = 5A$		15		S
Diode Forward On Voltage	V_{SD}	$I_S = 1.0A, V_{GS} = 0V$			1.0	V
Reverse Recovery Time	T_{rr}	$I_S = 5A, V_{GS} = 0V,$ $di/dt = 100A/\mu S$		16		nS
Reverse Recovery Charge	Q_{rr}			8.9		nC
Dynamic ^b						
Total Gate Charge	Q_g	$V_{DS} = 15V, V_{GS} = 4.5V$ $I_D = 5.8A$		9.7	12	nC
Gate-Source Charge	Q_{gs}			1.6		
Gate-Drain Charge	Q_{gd}			3.1		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS} = 15V, R_L = 2.7\Omega, R_G = 3\Omega,$ $V_{GS} = 10V$		3.3		nS
Turn-On Rise Time	t_r			4.8		
Turn-Off Delay Time	$t_{d(off)}$			26.3		
Turn-Off Fall Time	t_f			4.1		
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = -15V, f = 1.0MHz$		823	1030	pF
Output Capacitance	C_{oss}			99		
Reverse Transfer Capacitance	C_{rss}			77		
Gate Resistance	R_g	$f = 1.0MHz$		1.2	3.6	Ω

Notes:

- (a) Pulse test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- (b) Guaranteed by design; not subject to production testing



Typical Electrical Characteristics (N-Channel)

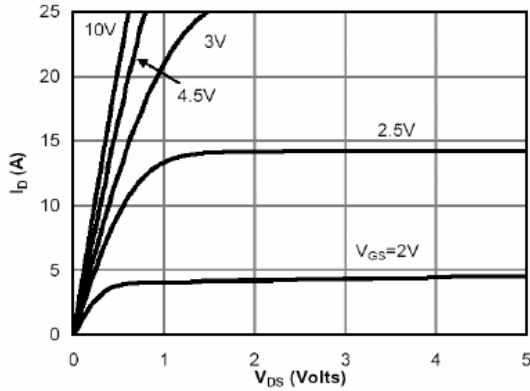


Fig 1. Typical Output Characteristics

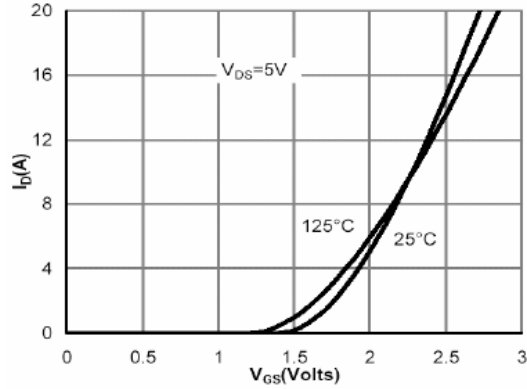


Fig 2. Transfer Characteristics

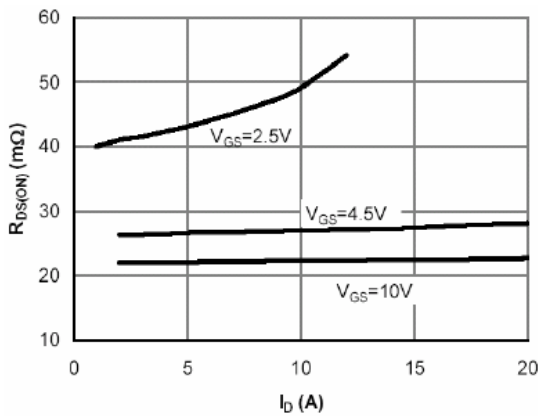


Fig 3. On-Resistance v.s. Drain Current and Gate Voltage

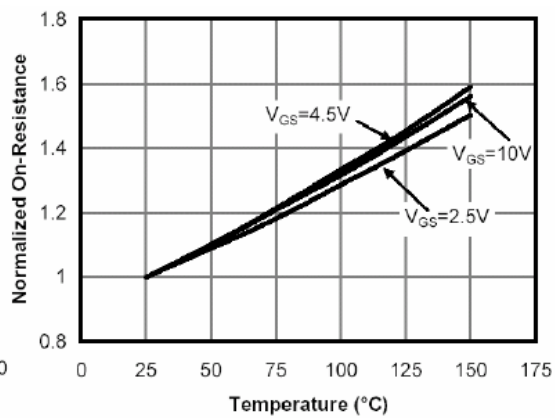


Fig 4. On-Resistance v.s. Junction Temperature

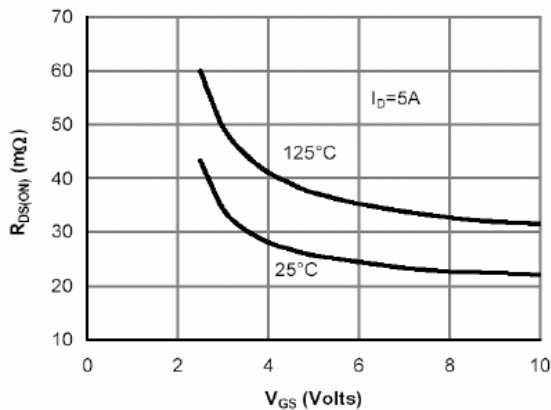


Fig 5. On-Resistance v.s. Gate-Source Voltage

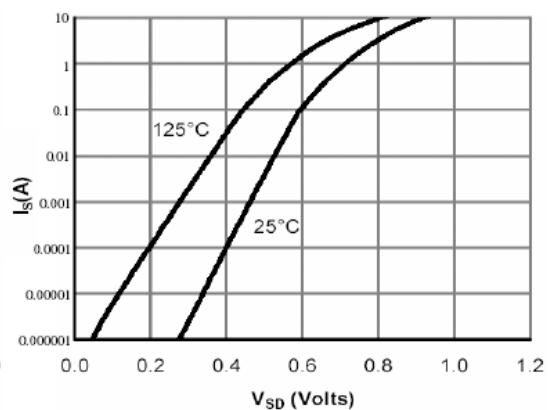
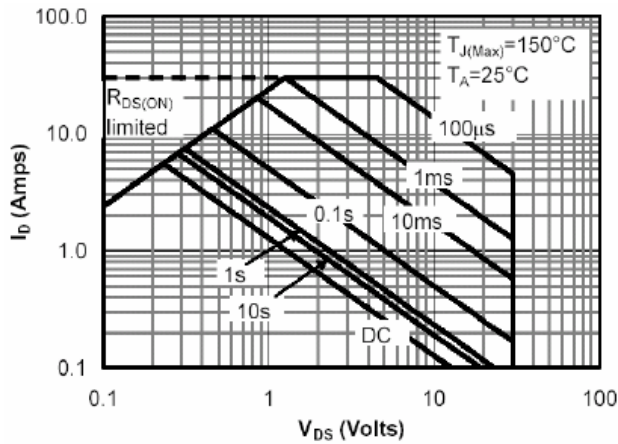
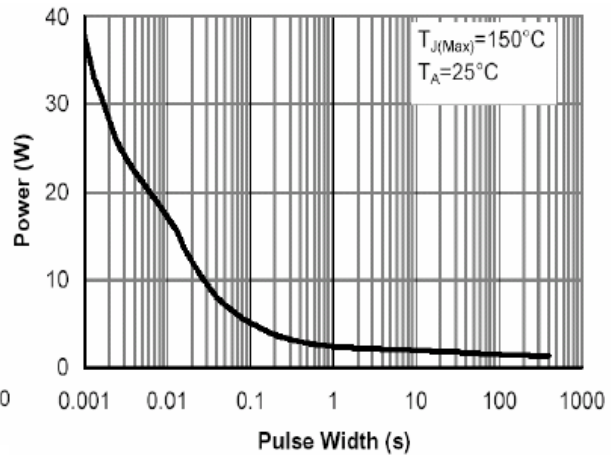
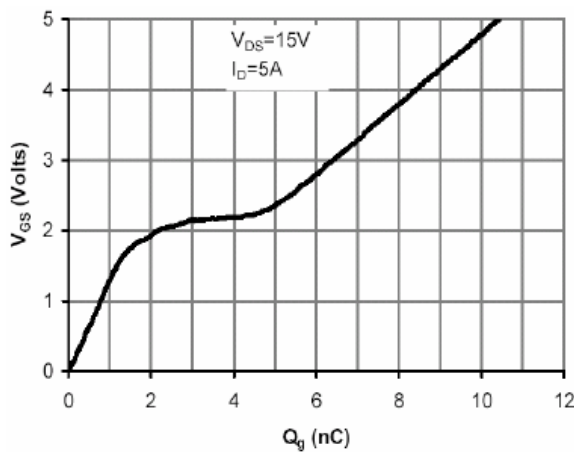
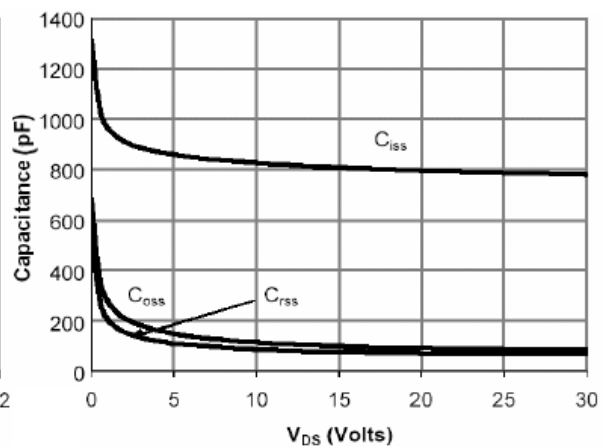
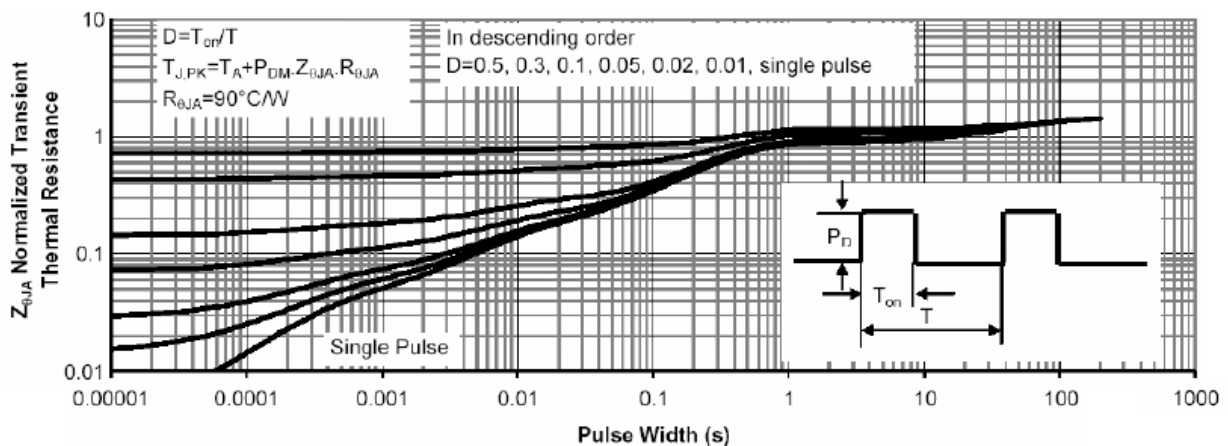
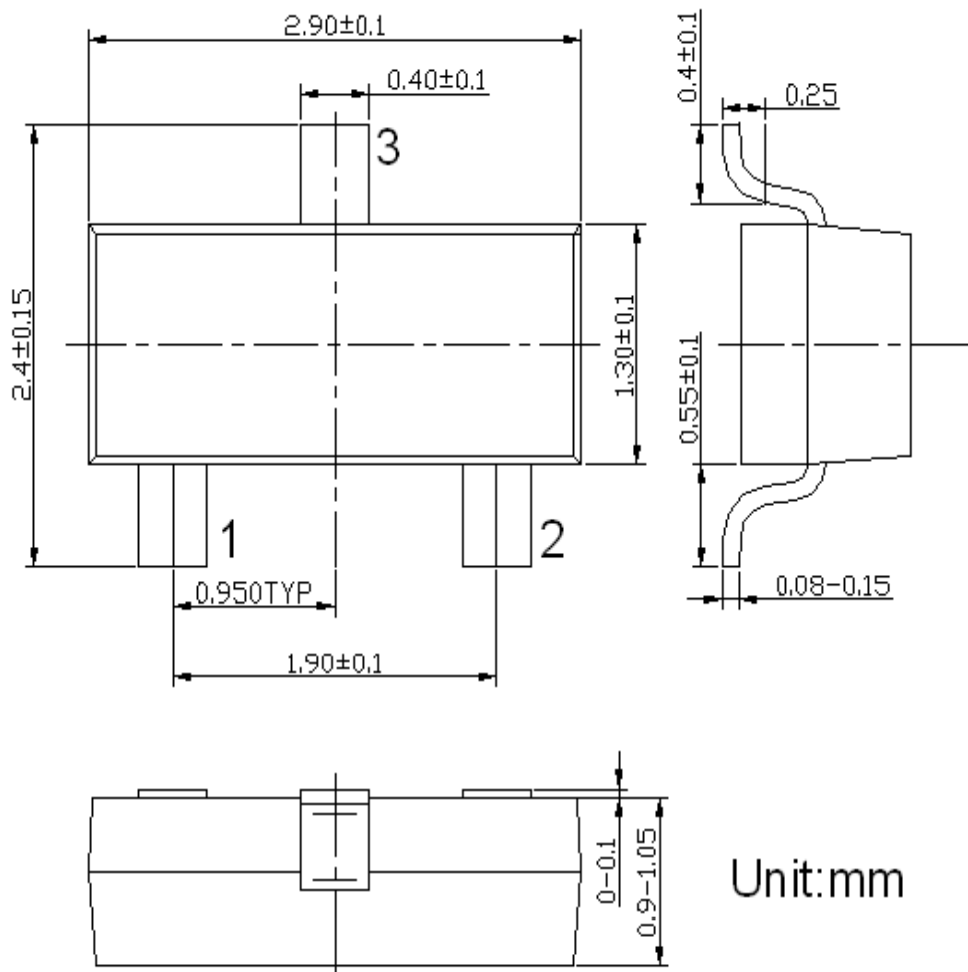


Fig 6. Body Diode Characteristics

Typical Electrical Characteristics (N-Channel)

Fig 7. Maximum Safe Operating Area

**Fig 8. Single Pulse Power Rating
Junction-to-Ambient**

Fig 9. Gate Charge Characteristics

Fig 10. Typical Capacitance Characteristics

Fig 11. Normalized Maximum Transient Thermal Impedance

Ordering Information

Part number	Marking	package	Quantity per reel
JY3400	3400	SOT23	3000

Package Information
(SOT23)


Unit:mm

Carrier Dimensions

PKG TYPE	W	P	E	F	D	D1	Po	Po10	P2
SOT23	8.00	4.00	1.75	3.50	1.50	1.00	4.00	40.00	2.00
Tolerance	+0.3/-0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.2	±0.05

A0	B0	K0	T
3.15	2.77	1.22	0.20
±0.1	±0.1	±0.1	±0.02

