



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

■ FEATURES

- Low $R_{DS(on)}$ Provides Higher Efficiency and Extends Battery Life
- Lower gate charge
- Fast Switch
- High performance trench technology
- Miniature SOT-23 Surface Mount Package Saves Board Space

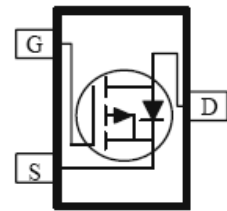
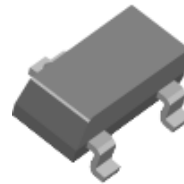
■ Product Summary

MOSFET		
$V_{DS}(V)$	MAX($R_{DS(on)}(m\Omega)$)	$I_D (A)$
-30 V	50@ $V_{GS} = -10 V$	-4.2
	65@ $V_{GS} = -4.5 V$	-4.0
	96@ $V_{GS} = -2.5 V$	-1.0

■ 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 lower voltage application, power management in portable and battery-powered products such as computers, printers, and PCMCIA cards, cellular and cordless telephones.

■ SOT-23

Maximum Ratings ($T_A = 25^\circ C$ 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	$T_A = 25^\circ C$	-4.2	A
		$T_A = 70^\circ C$	-3.5	
I_{DM}	Pulsed Drain Current ^b		-30	
I_S	Continuous Source Current (Diode Conduction) ^a		-2.2	A
P_D	Power Dissipation ^a	$T_A = 25^\circ C$	1.38	W
	Liner Derating Factor		0.01	W/ $^\circ C$
T_J, T_{stg}	Operation Junction and Storage Temperature Range		-55 to 150	$^\circ C$

Thermal Resistance Ratings

Symbol	Parameter	Maximum	Unit
R_{THJA}	Maximum Junction-to-Ambient ^a	90	$^\circ C/W$

Notes:

- (a) Surface Mounted on 1" x 1" FR4 Board.
 (b) 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	
Switch Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =-250uA	-30			V
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250uA	-0.5		-1.2	V
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} =±12V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -24 V, V _{GS} = 0 V T _J = 25°C			-1	uA
		V _{DS} = -24 V, V _{GS} = 0 V, T _J = 55°C			-5	
Drain-Source On-Resistance ^a	R _{DS(on)}	V _{GS} = -10 V, I _D = -4.2 A		43	50	mΩ
		V _{GS} = -4.5 V, I _D = -4.0 A		50	65	
		V _{GS} = -2.5 V, I _D = -1.0A		70	96	
Forward Transconductance ^a	g _{fs}	V _{DS} = -5V, I _D = -5A		11		S
Diode Forward Voltage	V _{SD}	I _S = -1.0 A, V _{GS} = 0 V			-1.0	V
Reverse Recovery Time	T _{rr}	I _S =-4A,V _{GS} =0V, di/dt=100A/uS		20.2		nS
Reverse Recovery Charge	Q _{rr}			11.2		nC
Dynamic ^b						
Total Gate Charge	Q _g	V _{DS} = -15V, V _{GS} = -4.5V I _D = -4A		9.4	16	nC
Gate-Source Charge	Q _{gs}			2		
Gate-Drain Charge	Q _{gd}			3		
Turn-On Delay Time	t _{d(on)}	V _{DS} =-15V, R _L =3.6Ω, R _G = 6Ω, V _{GS} = -10V		6.3	13	ns
Turn-On Rise Time	t _r			3.2	8.4	
Turn-Off Delay Time	t _{d(off)}			38.2	48.5	
Turn-Off Fall Time	t _f			12	21.3	
Input Capacitance	C _{iss}	V _{GS} =0V,V _{DS} =-15V,f =1.0MHz		954	1104	pF
Output Capacitance	C _{oss}			115	187	
Reverse Transfer Capacitance	C _{rss}			77	97	
Gate Resistance	R _g	f =1.0MHz		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 (P Channel)

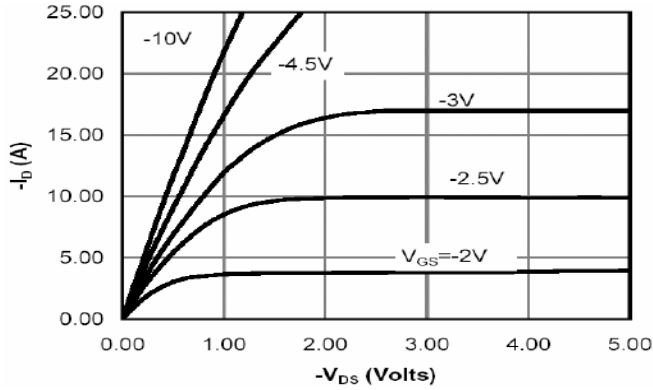


Fig 1. Typical Output Characteristics

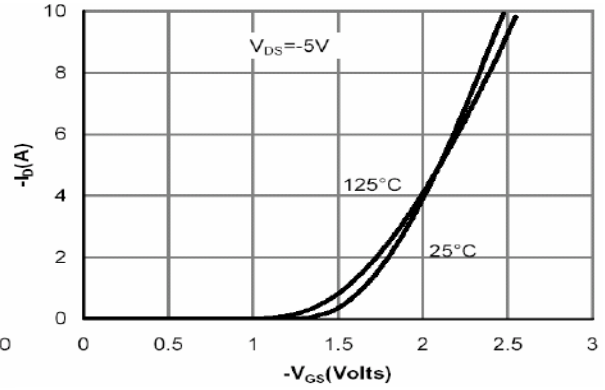


Fig 2. Transfer Characteristics

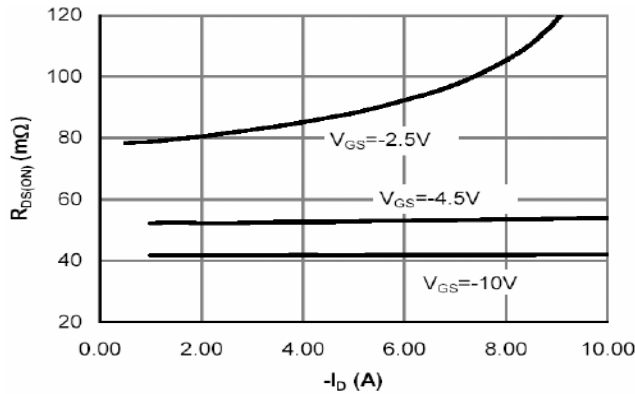


Fig 3. On-Resistance v.s. Drain Current and Gate Voltage

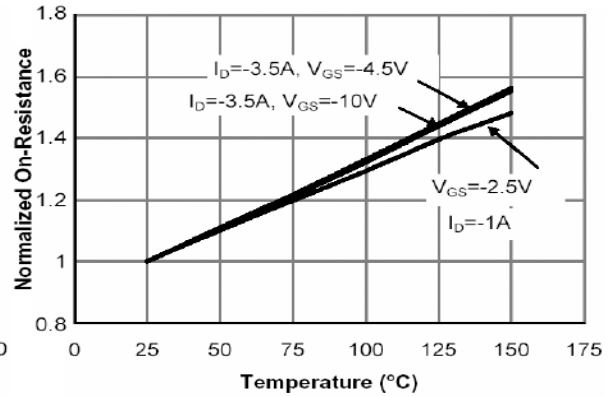


Fig 4. On-Resistance v.s. Junction Temperature

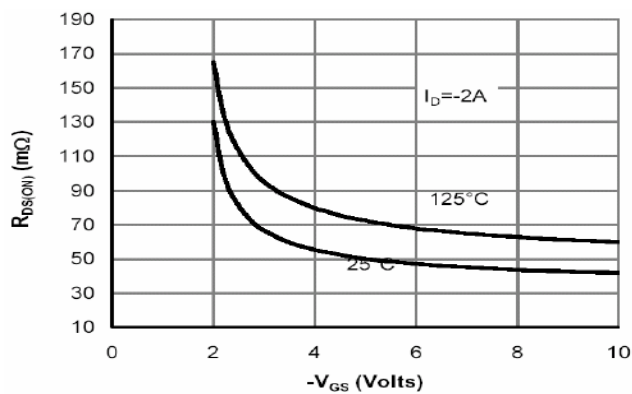


Fig 5. On-Resistance v.s. Gate-Source Voltage

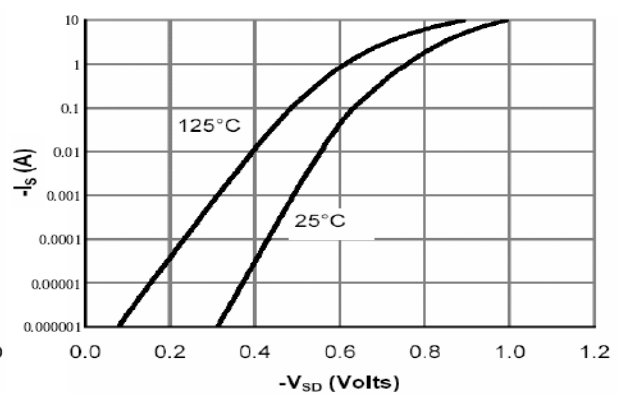


Fig 6. Body Diode Characteristics



Typical Electrical Characteristics (P Channel)

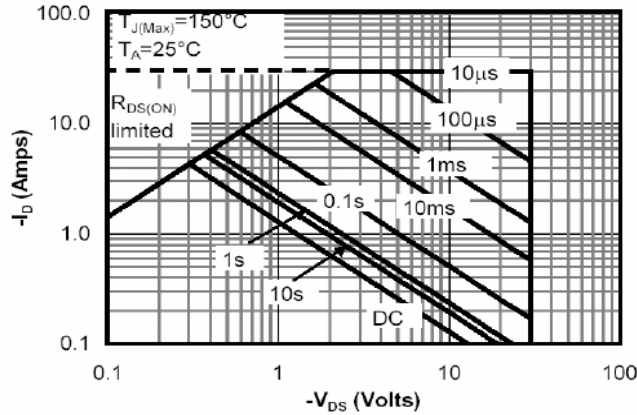


Fig 7. Maximum Safe Operating Area

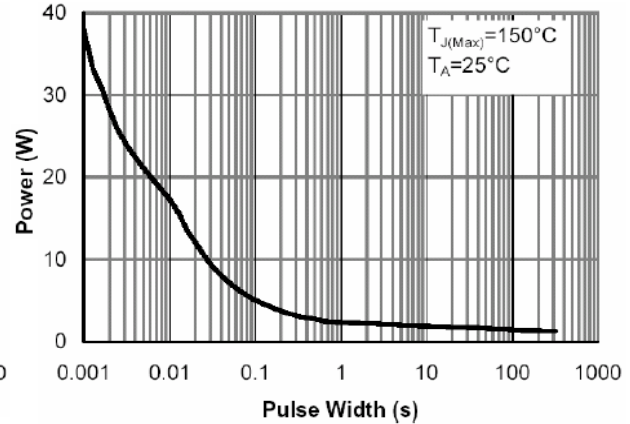


Fig 8. Single Pulse Power Rating
Junction-to-Ambient

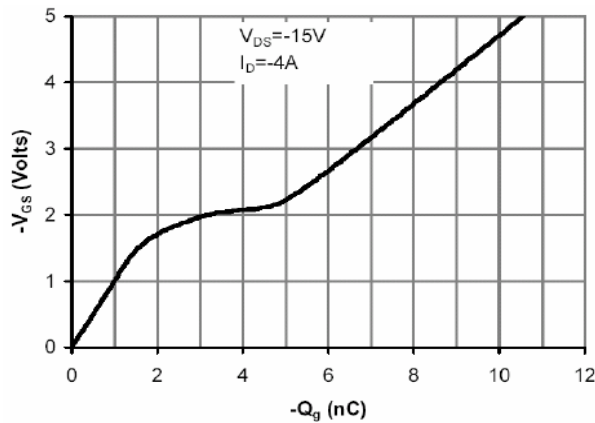


Fig 9. Gate Charge Characteristics

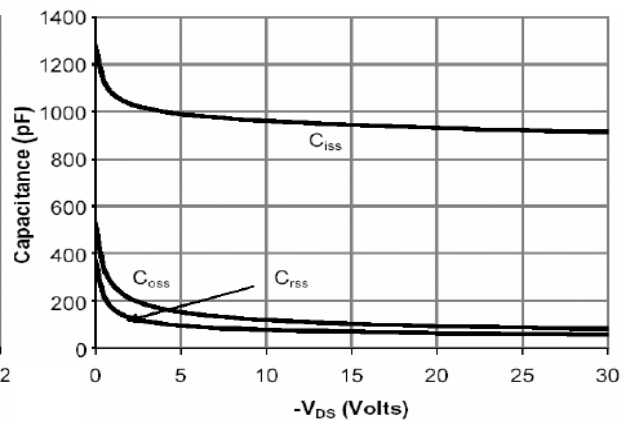


Fig 10. Typical Capacitance Characteristics

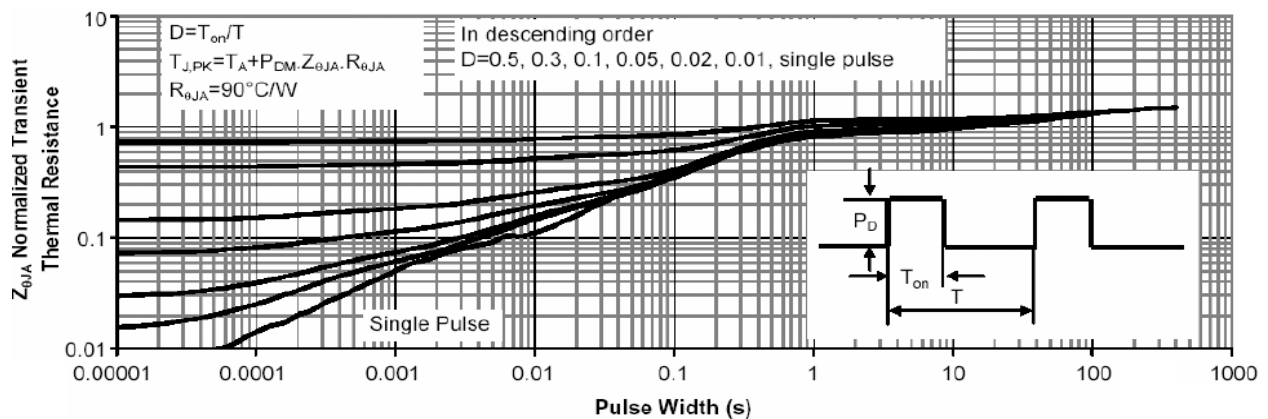


Fig 11. Normalized Maximum Transient Thermal Impedance

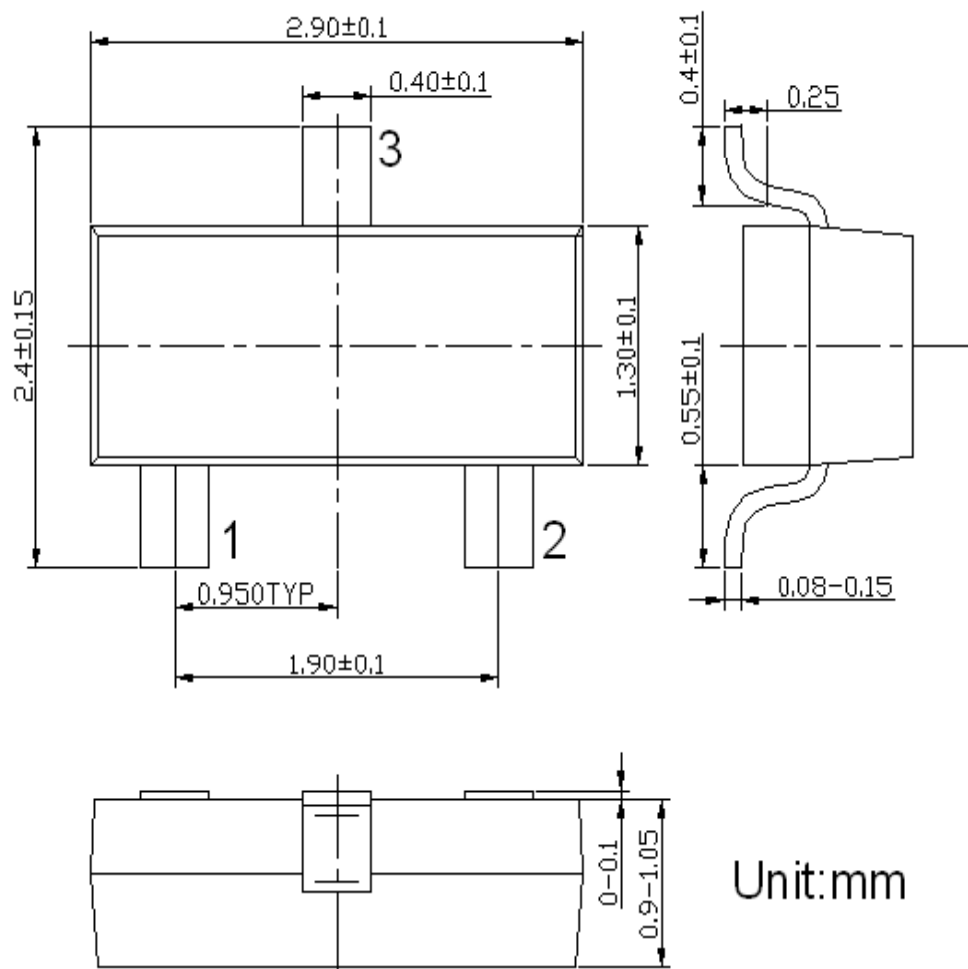


Ordering Information

Part number	Marking	package	Quantity per reel
JY3401A	3401	SOT-23	3000

Package Information

(SOT-23)





Carrier Dimensions

PKG TYPE	W	P	E	F	D	D1	Po	Po10	P2
SOT-23	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

