

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

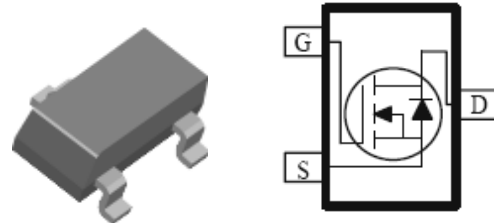
■ Product Summary

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 ($T_A = 25^\circ C$ 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	$T_A = 25^\circ C$	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:

- (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	
Static						
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	0.7		1.4	V
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} =±12V			±100	nA
Drain-Source Leakage 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 = 5.8 A			41	m Ω
		V _{GS} = 4.5 V, I _D = 5.0 A			45	
		V _{GS} = 2.5 V, 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 = 1.0 A, V _{GS} = 0 V			1.0	V
Reverse Recovery Time	T _{rr}	I _S =5A,V _{GS} =0V, di/dt=100A/uS		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 =2.7Ω, R _G = 3Ω, 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)

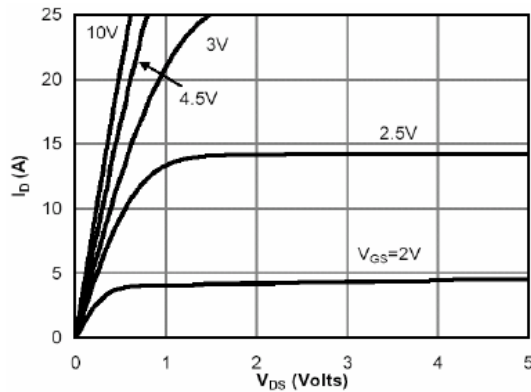


Fig 1. Typical Output Characteristics

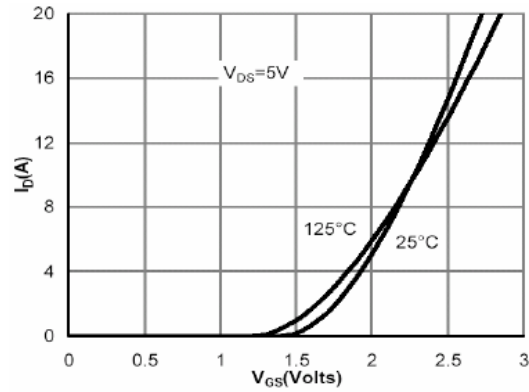


Fig 2. Transfer Characteristics

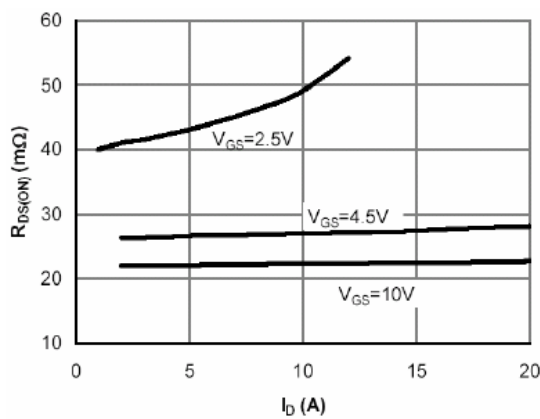


Fig 3. On-Resistance v.s. Drain Current and Gate Voltage

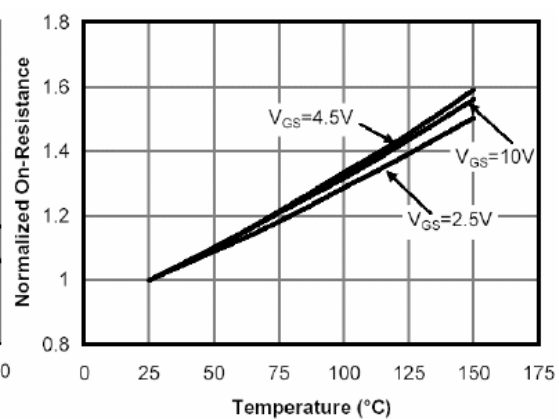


Fig 4. On-Resistance v.s. Junction Temperature

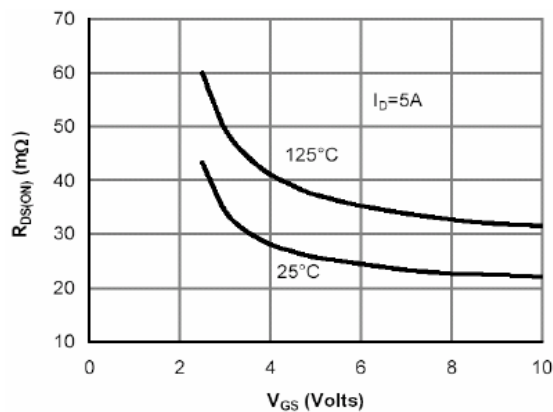


Fig 5. On-Resistance v.s. Gate-Source Voltage

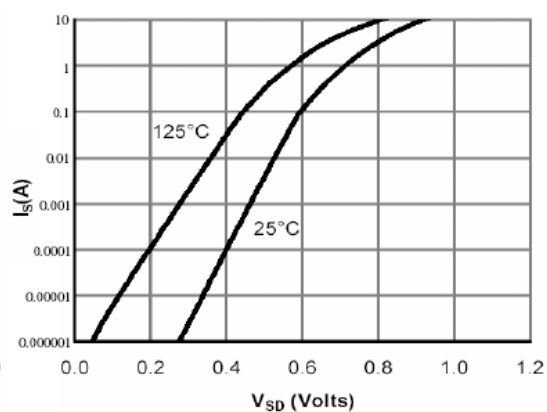


Fig 6. Body Diode Characteristics



Typical Electrical Characteristics (N-Channel)

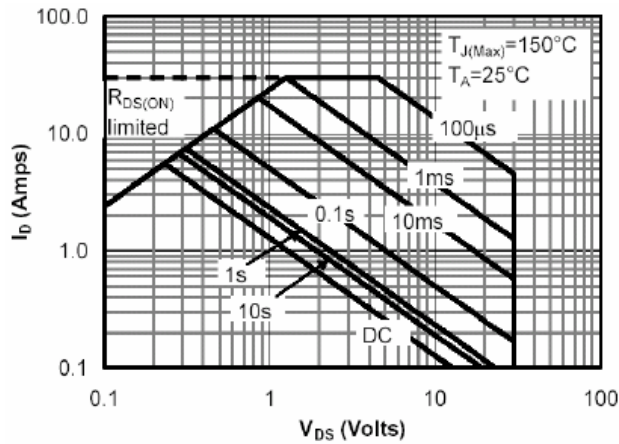


Fig 7. Maximum Safe Operating Area

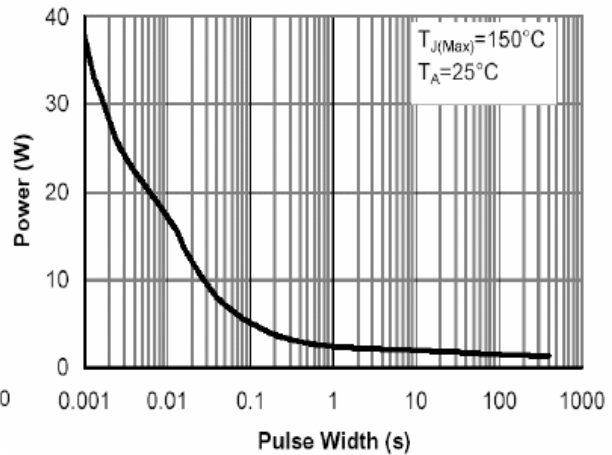


Fig 8. Single Pulse Power Rating
Junction-to-Ambient

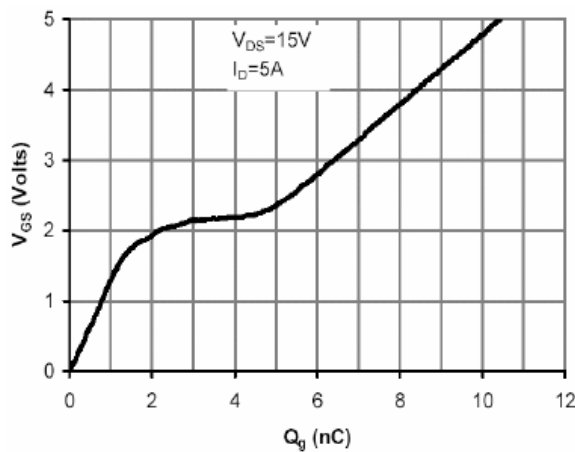


Fig 9. Gate Charge Characteristics

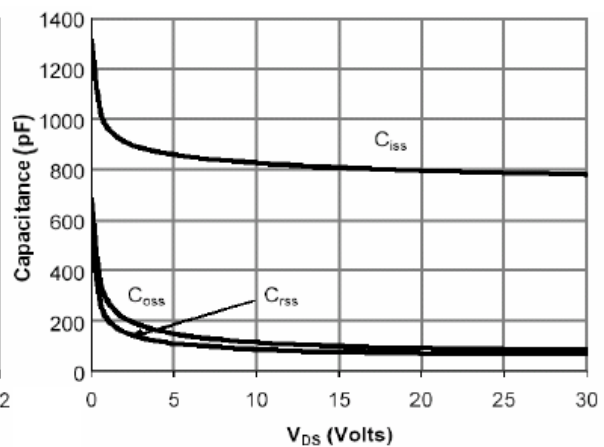


Fig 10. Typical Capacitance Characteristics

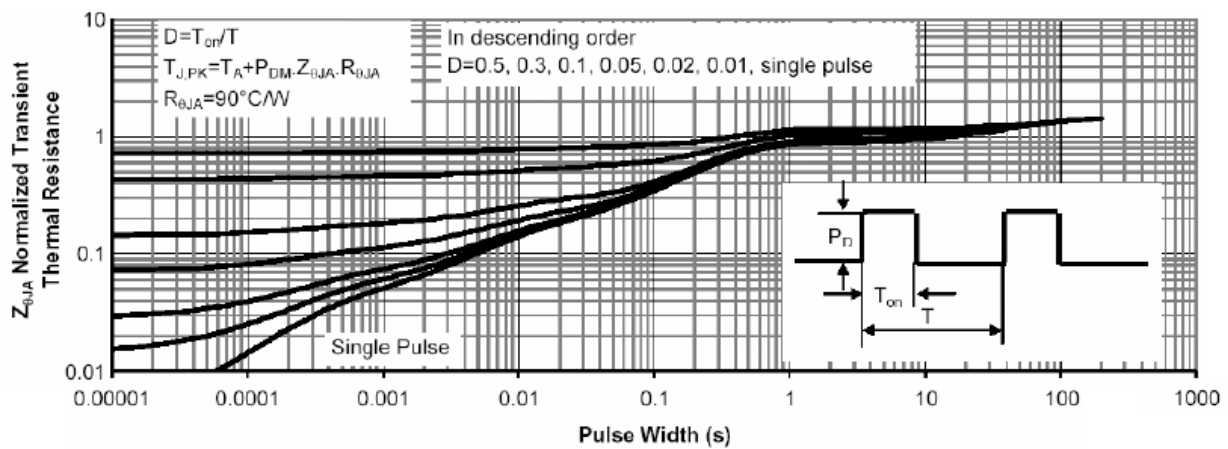


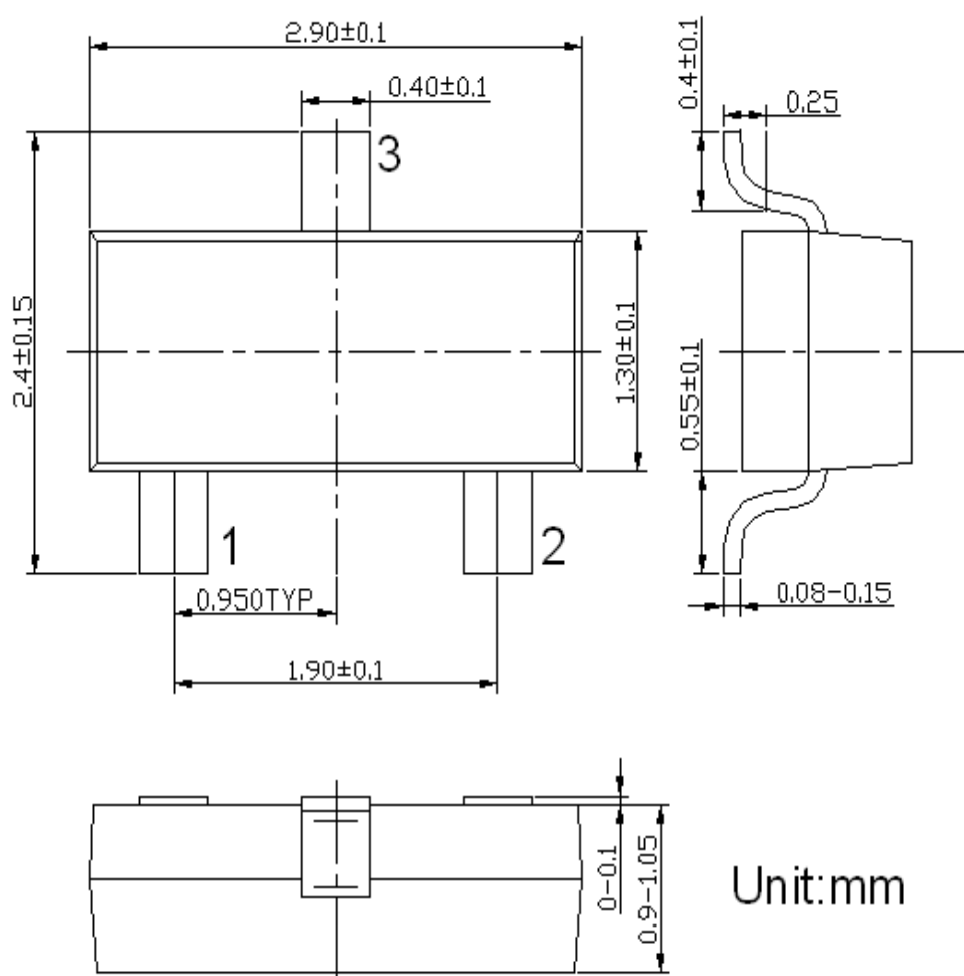
Fig 11. Normalized Maximum Transient Thermal Impedance

Ordering Information

Part number	Marking	package	Quantity per reel
A03400	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

