

30V P-Channel Enhancement-Mode MOSFET

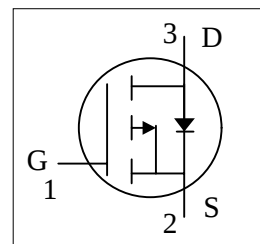
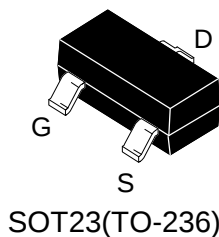
FEATURES:

- $V_{DS} = -30V$
- $R_{DS(ON)}, V_{GS} @ -10V, I_{DS} @ -5.3A = 70m\Omega$
- $R_{DS(ON)}, V_{GS} @ -4.5V, I_{DS} @ -4.2A = 100m\Omega$
- We declare that the material of product compliance with RoHS requirements and Halogen Free.

APPLICATIONS:

- Advanced trench process technology
- High density cell design for ultra low on-resistance

Circuit Diagram & Pin Configuration:



DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
SP9435-S03T	P94	3000/Tape&Reel

Maximum Ratings and Thermal Characteristics ($T_A = 25^\circ C$ unless otherwise noted)

Symbol	Parameter	Limit	Unit
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	± 20	
I_D	Continuous Drain Current	-5.3	A
I_{DM}	Pulsed Drain Current ¹⁾	-20	
P_D	Maximum Power Dissipation	$T_A = 25^\circ C$	W
		$T_A = 75^\circ C$	
T_J, T_{stg}	Operating Junction and Storage Temperature Range	-55 to 150	$^\circ C$
$R_{\theta JC}$	Junction-to-Case Thermal Resistance	50	$^\circ C/W$
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance (PCB mounted) ²⁾	90	

Note: 1. Repetitive Rating: Pulse width limited by the maximum junction temperature

2. 1-in² 2oz Cu PCB board

3. Guaranteed by design; not subject to production testing

ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
Static						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = -250uA	-30			V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} = -4.5V, I _D = -4.2A		70.0	100.0	mΩ
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} = -10V, I _D = -5.3A		50.0	70.0	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D = -250uA	-1	-1.7	-3	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = -24V, V _{GS} = 0V			1	uA
I _{GSS}	Gate Body Leakage	V _{GS} = ± 20V, V _{DS} = 0V			±100	nA
g _{fs}	Forward Transconductance	V _{DS} = -10V, I _D = -5.3A		10		S
Dynamic ³⁾						
Q _g	Total Gate Charge	V _{DS} =-15V, I _D = -5.3A V _{GS} = -10V		28		nC
Q _{gs}	Gate-Source Charge			3		
Q _{gd}	Gate-Drain Charge			7		
t _{d(on)}	Turn-On Delay Time	V _{DD} = -15V, R _L = 15 Ω I _D = -1A, V _{GEN} = -10V R _G = 6		9		ns
t _r	Turn-On Rise Time			15		
t _{d(off)}	Turn-Off Delay Time			75		
t _f	Turn-Off Fall Time			40		
C _{iss}	Input Capacitance	V _{DS} = -15V, V _{GS} = 0V f = 1.0 MHz		745		pF
C _{oss}	Output Capacitance			440		
C _{rss}	Reverse Transfer Capacitance			120		
Source-Drain Diode						
I _S	Max. Diode Forward Current				-2.6	A
V _{SD}	Diode Forward Voltage	I _S = -2.6A, V _{GS} = 0V			-1.3	V

Note Pulse test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$

TYPICAL ELECTRICAL CHARACTERISTICS

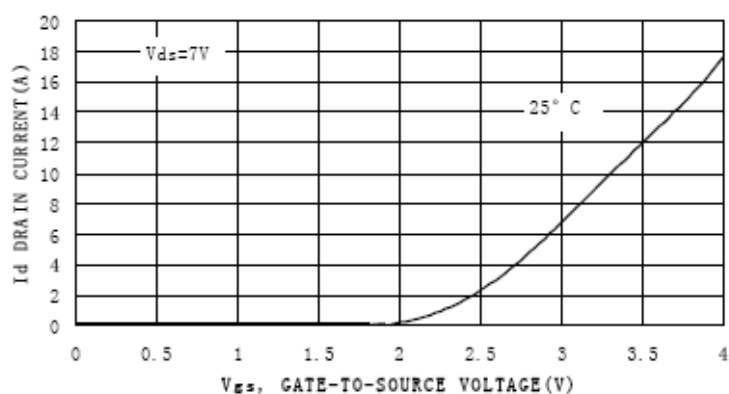


Figure 1. Transfer Characteristics

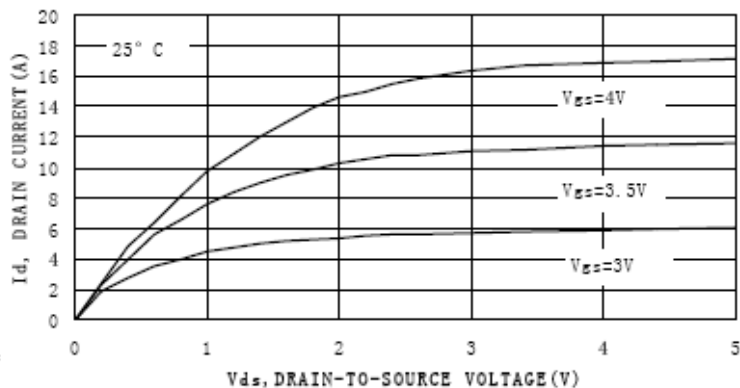


Figure 2. On-Region Characteristics

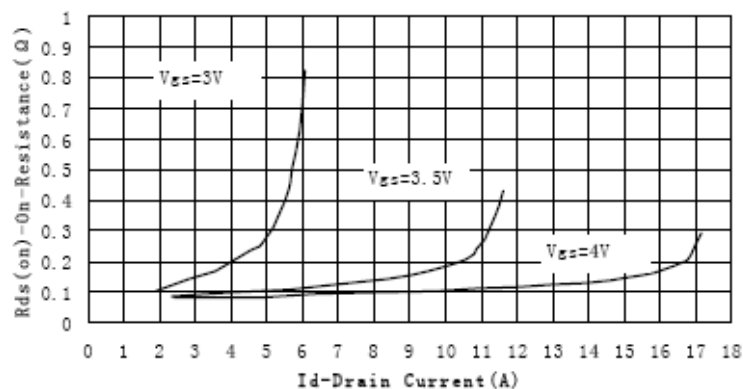


Figure 3. On-Resistance versus Drain Current

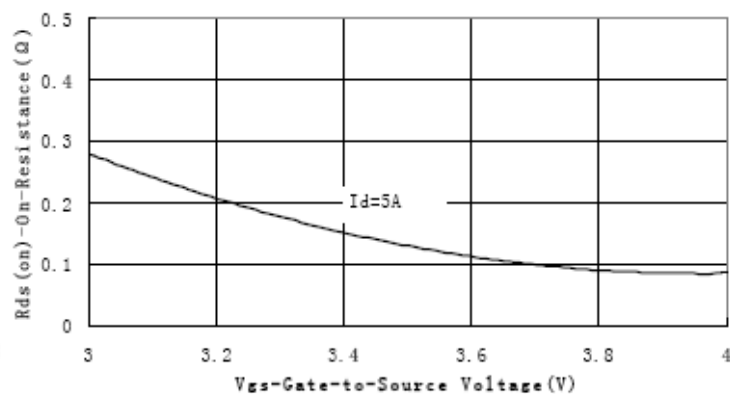
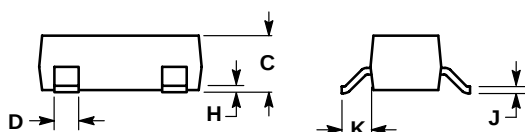
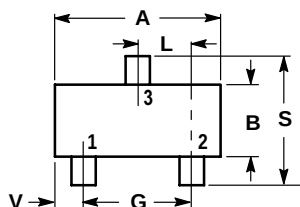


Figure 4. On-Resistance vs. Gate-to-Source Voltage

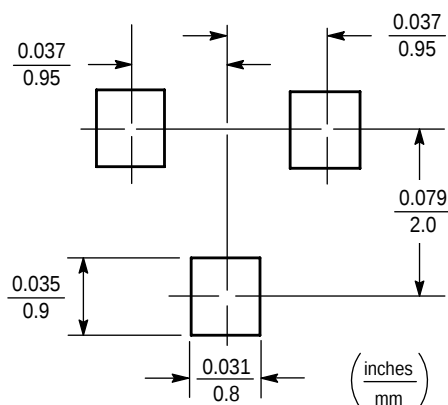
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NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M,1982
2. CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.1102	0.1197	2.80	3.04
B	0.0472	0.0551	1.20	1.40
C	0.0350	0.0440	0.89	1.11
D	0.0150	0.0200	0.37	0.50
G	0.0701	0.0807	1.78	2.04
H	0.0005	0.0040	0.013	0.100
J	0.0034	0.0070	0.085	0.177
K	0.0140	0.0285	0.35	0.69
L	0.0350	0.0401	0.89	1.02
S	0.0830	0.1039	2.10	2.64
V	0.0177	0.0236	0.45	0.60



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