

Features

- P-Channel
- Enhancement mode
- Fast Switching

Part ID

VS3540AC

• Pb-free lead plating; RoHS compliant

V DS	-30	V
R DS(on),max @ VGS=-10V	52	mΩ
R DS(on),max @ VGS=-4.5V	62	mΩ
I D	-3.4	Α

SOT23





Tape and reel	
information	
3000pcs/reel	



Maximum ratings, at T_j =25 °C, unless otherwise specified

Package Type

SOT23

Symbol	Parameter	Rating	Unit		
V _{(BR)DSS}	Drain-Source breakdown voltage	-30	V		
Vgs	Gate-Source voltage	±12	V		
Is	Diode continuous forward current $T_A = 25^{\circ}C$		-1.2	А	
	Continuous drain current @Vgs=-4.5V	T _A =25°C	-3.4	А	
I _D		T _A =70°C	-2.7	А	
I _{DM}	Pulse drain current tested ① T _A =25°C		12	А	
P _D	Maximum power dissipation T _A =25°C		1	W	
$T_{STG}T_{J}$	Storage and operating temperature range	-55 to 150	°C		
Thermal Characteristics					
ReJL	Thermal Resistance, Junction-to-Lead	80	°C/W		
$R_{ hetaJA}$	Thermal Resistance, Junction-to-Ambient	125	°C/W		

Marking

VS01



Electrical Characteristics

Ctrical Characteristics @ T j = 25°C (ur Drain-Source Breakdown Voltage Zero Gate Voltage Drain Current(Tj=25°C) Zero Gate Voltage Drain Current(Tj=125°C) Gate-Body Leakage Current	Vgs=0V, Ip=-250μA Vps=-30V,Vgs=0V Vps=-30V,Vgs=0V	-30 			V	
Zero Gate Voltage Drain Current(Tj=25°C) Zero Gate Voltage Drain Current(Tj=125°C) Gate-Body Leakage Current	VDS=-30V,VGS=0V VDS=-30V,VGS=0V				V	
Zero Gate Voltage Drain Current(Tj=125°C) Gate-Body Leakage Current	Vps=-30V,Vgs=0V			1		
Gate-Body Leakage Current	·			'	μΑ	
. ,	\/00-112\/\/p0-0\/			100	μA	
Cata Throphold Voltage	VGS=±12V,VDS=UV			±100	nA	
Gate Threshold Voltage	VDS=VGS, ID=-250µA	-0.5		-1.2	V	
	Vgs=-10V, ID=-4A		52	60	mΩ	
Drain-Source On-State Resistance②	Vgs=-4.5V, ID=-3A		62	70	mΩ	
	Vgs=-2.5V, ID=-2A		81	105	mΩ	
Electrical Characteristics @ T _j = 25°C (unless otherwise st	ated)				
Input Capacitance			805		pF	
Output Capacitance	VDS=-15V,VGS=0V, f=1MHz		60		pF	
Reverse Transfer Capacitance	1-1141112		50		pF	
Gate Resistance	f=1MHz		10		Ω	
Total Gate Charge			10		nC	
Gate-Source Charge	Vps=-15V,lp=-4A,		2.3		nC	
Gate-Drain Charge	V65= 4.5V		4.2		nC	
Q _{gd} Gate-Drain Charge 4.2 nC Switching Characteristics						
Turn-on Delay Time	\\\ 45\\\		4		ns	
Turn-on Rise Time	VDD=-15 V, ID=-4A,		4		ns	
Turn-Off Delay Time	Rg=3Ω,		28		ns	
Turn-Off Fall Time	Vgs=-4.5V		4.6		ns	
Source- Drain Diode Characteristics@ T _j = 25°C (unless otherwise stated)						
Forward on voltage	Isp=-3A,Vgs=0V		-0.85	-1.2	V	
Reverse Recovery Time	Tj=25℃,Isd=-3A,		12		ns	
Reverse Recovery Charge	Vgs=0V di/dt=-100A/us		3.6		nC	
	Gate Threshold Voltage Drain-Source On-State Resistance② Electrical Characteristics @ T j= 25°C (Input Capacitance Output Capacitance Reverse Transfer Capacitance Gate Resistance Total Gate Charge Gate-Source Charge Gate-Drain Charge Gate-Drain Charge Turn-on Delay Time Turn-on Rise Time Turn-Off Delay Time Turn-Off Fall Time Prain Diode Characteristics@ T j= 25°C Forward on voltage Reverse Recovery Time	Gate Threshold Voltage Vps=Vgs, lp=-250µA Vgs=-10V, lp=-4A Vgs=-4.5V, lp=-3A Vgs=-2.5V, lp=-2A Electrical Characteristics @ T j= 25°C (unless otherwise st lnput Capacitance Output Capacitance Gate Resistance Gate Resistance Gate-Source Charge Gate-Drain Charge Turn-on Delay Time Turn-on Rise Time Turn-Off Delay Time Turn-Off Fall Time Prain Diode Characteristics @ Tj= 25°C (unless otherwise st lnput Capacitance) Isp=-3A,Vgs=0V, Isp=-15V,Ip=-4A, Vgs=-15V,Ip=-4A, Vgs=-4.5V Vps=-15V,Ip=-4A, Vgs=-4.5V Vps=-15V,Ip=-4A, Vgs=-4.5V Vps=-15V,Ip=-4A, Vgs=-4.5V Vps=-15V,Ip=-4A, Vgs=-4.5V Vps=-15V,Ip=-4A, Vgs=-4.5V Isp=-3A,Vgs=0V Tj=25°C,Isd=-3A, Vgs=0V Tj=25°C,Isd=-3A, Vgs=0V	Gate Threshold Voltage Vbs=Vgs, Ib=-250μA -0.5 Vgs=-10V, Ib=-4A Vgs=-4.5V, Ib=-3A Vgs=-2.5V, Ib=-2A Input Capacitance Output Capacitance Reverse Transfer Capacitance Gate Resistance f=1MHz Total Gate Charge Gate-Source Charge Gate-Drain Charge Characteristics Turn-on Delay Time Vbs=-15 V, Ib=-4A, Vgs=-4.5V Turn-Off Delay Time Vbp=-15 V, Ib=-4A, Pg=-4A, P	Gate Threshold Voltage VDS=VGS, ID=-250μA -0.5 VGS=-10V, ID=-4A 52 VGS=-4.5V, ID=-3A 62 VGS=-2.5V, ID=-2A 81 Electrical Characteristics @ T j= 25°C (unless otherwise stated) Input Capacitance VDS=-15V, VGS=0V, ID=-2A 805 CHARACTERISTICS CHARACTERISTICS @ T j= 25°C (unless otherwise stated) Input Capacitance VDS=-15V, VGS=0V, ID=-4A, ID=-4	Gate Threshold Voltage Vos=Vos, lb=-250μA -0.5 -1.2 Drain-Source On-State Resistance ② Vos=-10V, lb=-4A 52 60 Vos=-4.5V, lb=-3A 62 70 Vos=-2.5V, lb=-2A 81 105 Electrical Characteristics ② T j= 25°C (unless otherwise stated) Input Capacitance 805 Output Capacitance 805 Reverse Transfer Capacitance 50 Gate Resistance f=1MHz 10 Total Gate Charge Vos=-15V, lb=-4A, Vos=-4A, Vos=-4A, Vos=-4.5V 2.3 Characteristics Turn-on Delay Time Vob=-15 V, Ib=-4A, Ib=-	

NOTE:

① Repetitive rating; pulse width limited by max junction temperature.

② Pulse width \leq 300µs; duty cycle \leq 2%.



Typical Characteristics

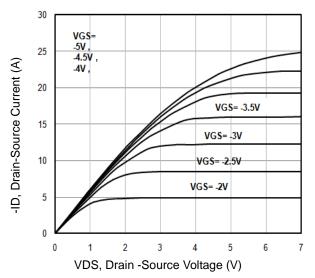


Fig1. Typical Output Characteristics

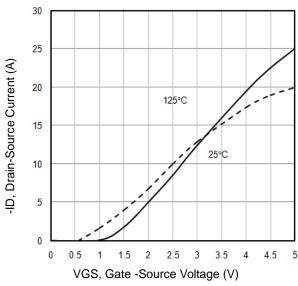


Fig3. Typical Transfer Characteristics

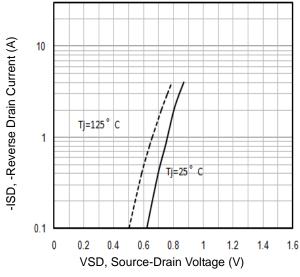
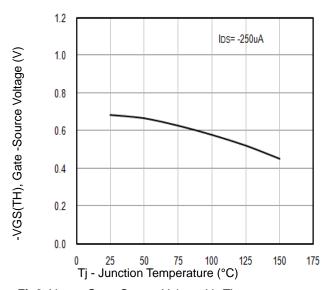


Fig5. Typical Source-Drain Diode Forward Voltage



 $\textbf{Fig2.} \ V_{GS(TH)} \ Gate \ \textbf{-Source Voltage Vs.Tj}$

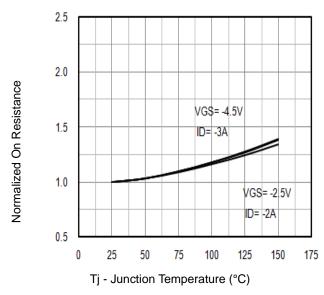


Fig4. Normalized On-Resistance Vs. Tj

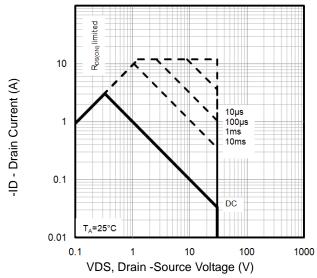


Fig6. Maximum Safe Operating Area



Typical Characteristics

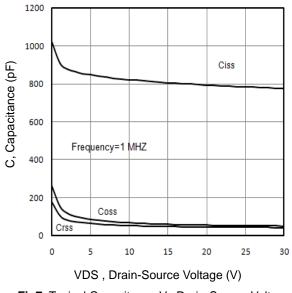
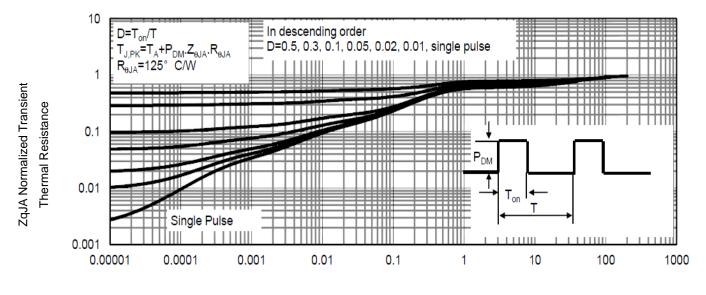


Fig7. Typical Capacitance Vs.Drain-Source Voltage

Fig8. Typical Gate Charge Vs.Gate-Source Voltage



Pulse Width (s)

Fig9. Normalized Maximum Transient Thermal Impedance

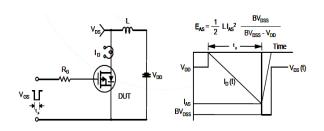


Fig10. Unclamped Inductive Test Circuit and waveforms

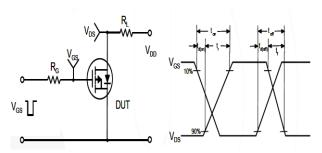
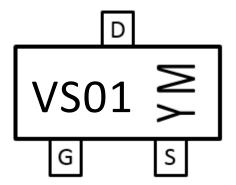


Fig11. Switching Time Test Circuit and waveforms



Marking Information



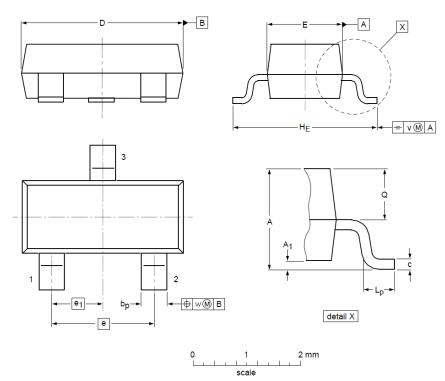
VS01: Part Number

YM: Date Code, Y means assembly year (e.g. E=2017, F=2018, G=2019, H=2020, etc),

M means assembly month (e.g. 9=September, O=October, N=November, D=December, etc)



SOT23 Package Outline Data



Label	DIMENSIONS (unit: mm)			
Label	Min	Тур	Max	
Α	0.90	1.03	1.10	
\mathbf{A}_1	0.01	0.05	0.10	
b _p	0.38	0.42	0.48	
С	0.09	0.13	0.15	
D	2.80	2.92	3.00	
Е	1.20	1.33	1.40	
е		1.90		
e ₁		0.95		
HE	2.10	2.40	2.50	
L_p	0.40	0.50	0.60	
Ø	0.45	0.49	0.55	
٧		0.20		
W		0.10		

Notes:

- 1. Follow JEDEC TO-236, variation AB.
- 2. Dimension "D" does NOT include mold flash, protrusions or gate burrs. Mold flash, protrusions or gate burrs shall not exceed 0.25mm per side.
- 3. Dimension "E" does NOT include interlead flash or protrusion. Interlead flash or protrusion shall not exceed 0.25mm per side.

Customer Service

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