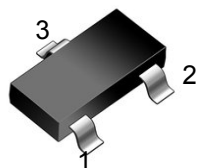
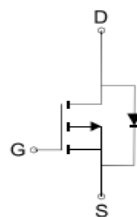




SOT-23



MARKING: A5



P-Channel MOSFET

Features

Advanced trench process technology
High density cell design for Ultra Low On-Resistance
Halogen free and RoHS compliant

Mechanical Data

SOT-23 Small Outline Plastic Package
EpoxyUL:94V-0

Summary of Packing Options

Package	Packing Description	Packing Quantity	Industry Standard
SOT-23	Tape/Reel,7" reel	3000	EIA-481-1

Maximum Ratings & Thermal Characteristics

(Ratings at 25°C ambient temperature unless otherwise specified.)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±12	
Continuous Drain Current	I_D	-4.1	A
Pulsed Drain Current ¹⁾	I_{DM}	-15	
Maximum Power Dissipation ²⁾	P_D	TA = 25°	W
		TA = 75°C	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150	°C
Junction-to-Ambient Thermal Resistance (PCB mounted) ²⁾	R_{thJA}	100	
Junction-to-Ambient Thermal Resistance (PCB mounted) ³⁾		166	

Notes

¹⁾ Pulse width limited by maximum junction temperature.

²⁾ Surface Mounted on FR4 Board, $t \leq 5$ sec.

³⁾ Surface Mounted on FR4 Board.

Electrical Characteristics

(Ratings at 25°C ambient temperature unless otherwise specified.)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V, I_D = -250\mu A$	-20			V
Drain-Source On-State Resistance ¹⁾	$R_{DS(on)}$	$V_{GS} = -4.5V, I_D = -4.1A$		46	52	mΩ
		$V_{GS} = -2.5V, I_D = -3.0A$		60	75	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	0.4		1	V
Zero Gate Voltage Drain Current I_0	I_{DSS}	$V_{DS} = -20V, V_{GS} = 0V$			-1	μA
		$V_{DS} = -20V, V_{GS} = 0V, T_J = 55^\circ C$			-10	
Gate Body Leakage	I_{GSS}	$V_{GS} = \pm 12V, V_{DS} = 0V$			±100	nA
Forward Transconductance ¹⁾	g_{fs}	$V_{DS} = -5V, I_D = -3.5A$		6.5	—	S



Electrical Characteristics

(Ratings at 25°C ambient temperature unless otherwise specified).

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Dynamic						
Total Gate Charge	Q _g	V _{DS} = -6V, I _D ≅ -3.5A V _{GS} = -4.5V		5.8	10	nC
Gate-Source Charge	Q _{gs}			0.85		
Gate-Drain Charge	Q _{gd}			1.7		
Turn-On Delay Time	t _{d(on)}	V _{DD} = -6V, RL=6Ω I _D ≅ -1.A, V _{GEN} = -4.5V R _G = 6Ω		13	25	ns
Turn-On Rise Time	t _r			36	60	
Turn-Off Delay Time	t _{d(off)}			42	70	
Turn-Off Fall Time	t _f			34	60	
Input Capacitance	C _{iss}	V _{DS} = -6V, V _{GS} = 0V f = 1.0 MHz		415		pF
Output Capacitance	C _{oss}			223		
Reverse Transfer Capacitance	C _{rss}			87		
Source-Drain Diode						
Max. Diode Forward Current	I _S				-1.6	A
Diode Forward Voltage	V _{SD}	I _S = -1.6A, V _{GS} = 0V		-0.8	-1.2	V

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

Ratings and Characteristic Curves

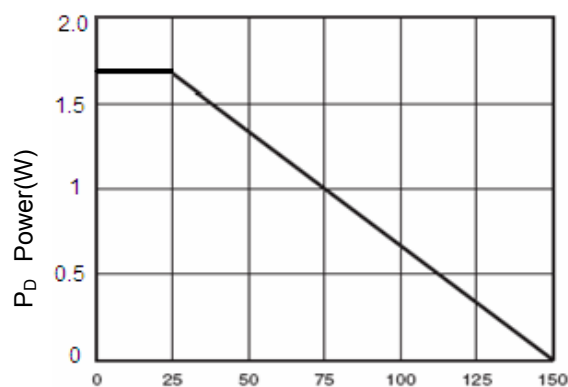


Figure 1 Power Dissipation

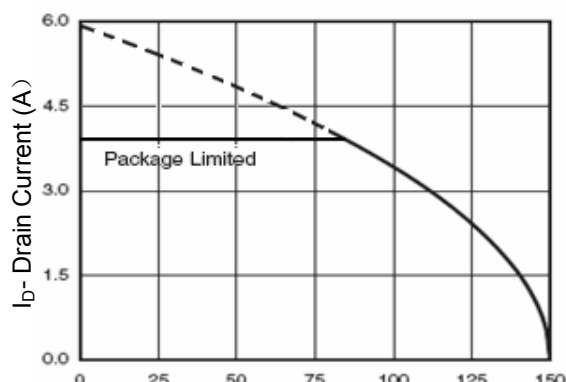


Figure 2 Drain Current

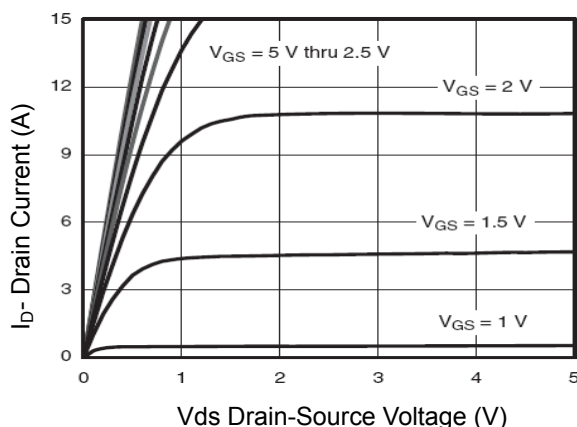


Figure 3 Output Characteristics

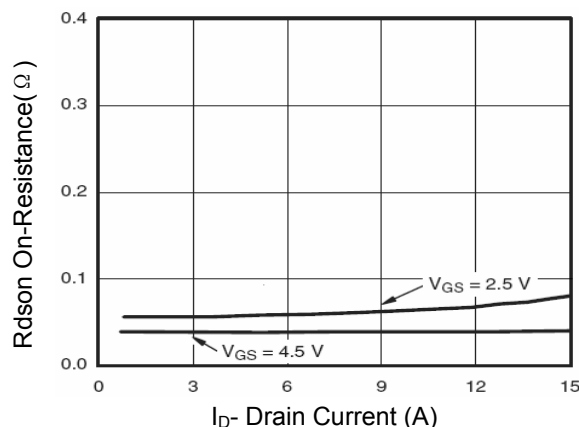


Figure 4 Drain-Source On-Resistance

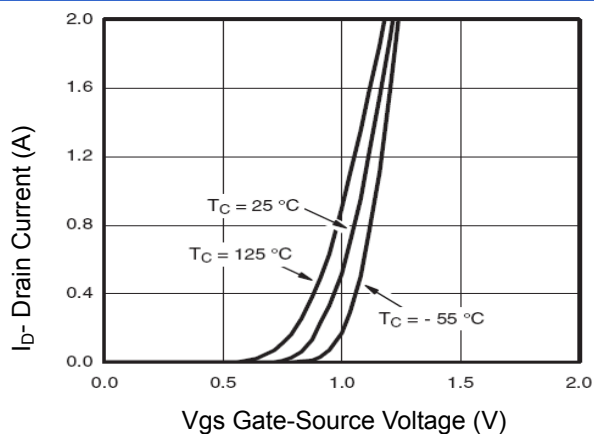


Figure 5 Transfer Characteristics

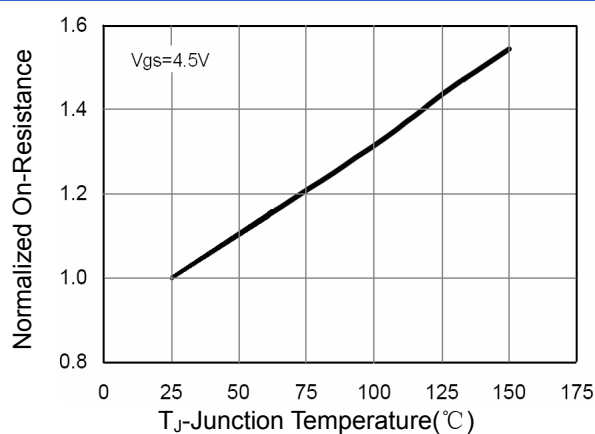


Figure 6 Drain-Source On-Resistance

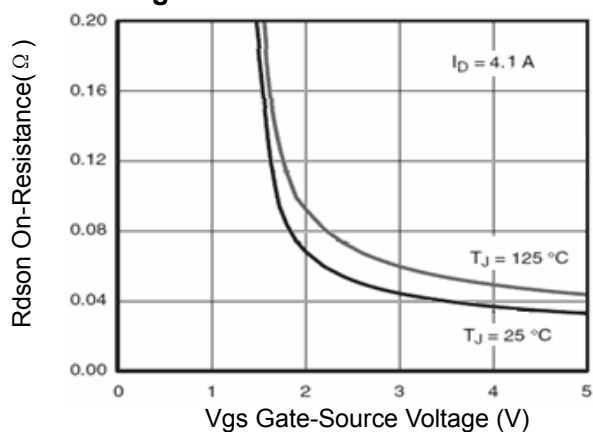


Figure 7 Rdson vs Vgs

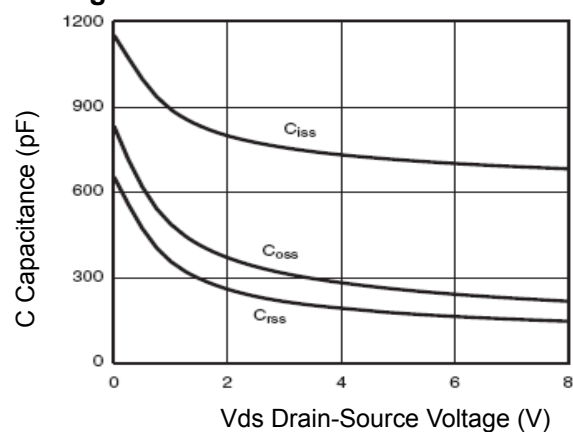


Figure 8 Capacitance vs Vds

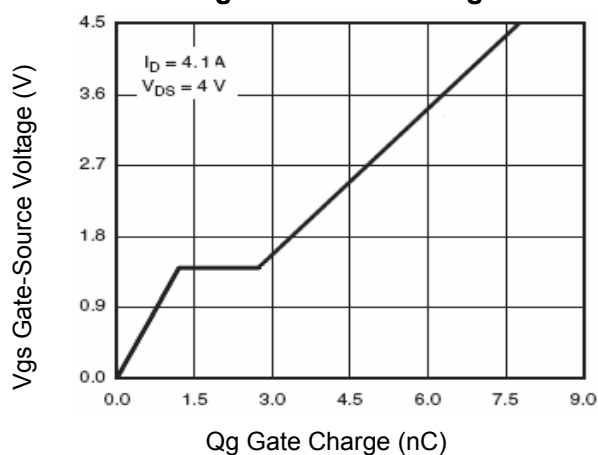


Figure 9 Gate Charge

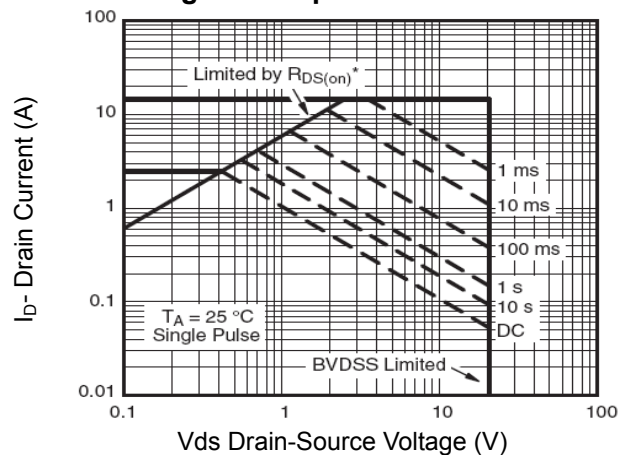
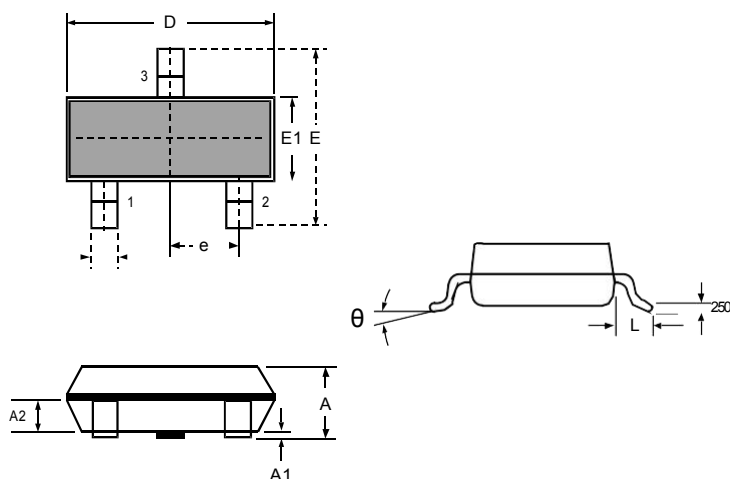


Figure 10 Safe Operation Area

Package Outline Dimensions: SOT-23



DIMENSIONS

SYMBOL	MILLIMETER		INCHES	
	MIN	MAX	MIN	MAX
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
D	2.800	3.000	0.110	0.118
b	0.300	0.500	0.012	0.020
E	2.250	2.550	0.089	0.100
E1	1.200	1.400	0.047	0.055
e	0.950 BSC		0.037 BSC	
L	0.300	0.500	0.012	0.020
theta	0	8°	0	8°