

30V P-Channel Enhancement-Mode MOSFET

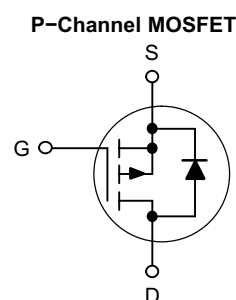
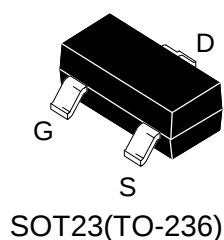
FEATURES:

- $V_{DS} = -30V$
- $I_D = -4.1A$ @ $V_{GS} = -10V$
- $R_{DS(ON)} < 70m$ ($V_{GS} = -10V$)
- $R_{DS(ON)} < 100m$ ($V_{GS} = -4.5V$)
- 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
SP3407-S03T	A07	3000/Tape&Reel

MAXIMUM RATINGS($T_a = 25^{\circ}C$)

Parameter		Symbol	Limits	Unit
Drain-Source Voltage		V_{DSS}	-30	V
Gate-to-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current	$T_a = 25^{\circ}C$	I_D	-4.1	A
	$T_a = 70^{\circ}C$		-3.5	
Pulsed Drain Current (Note 3)		I_{DM}	-25	
Power Dissipation (Note 2)	$T_a = 25^{\circ}C$	PD	1.4	W
	$T_a = 70^{\circ}C$		0.9	
Junction and Storage Temperature Range		T_j, T_{stg}	-55~+150	$^{\circ}C$

THERMAL CHARACTERISTICS

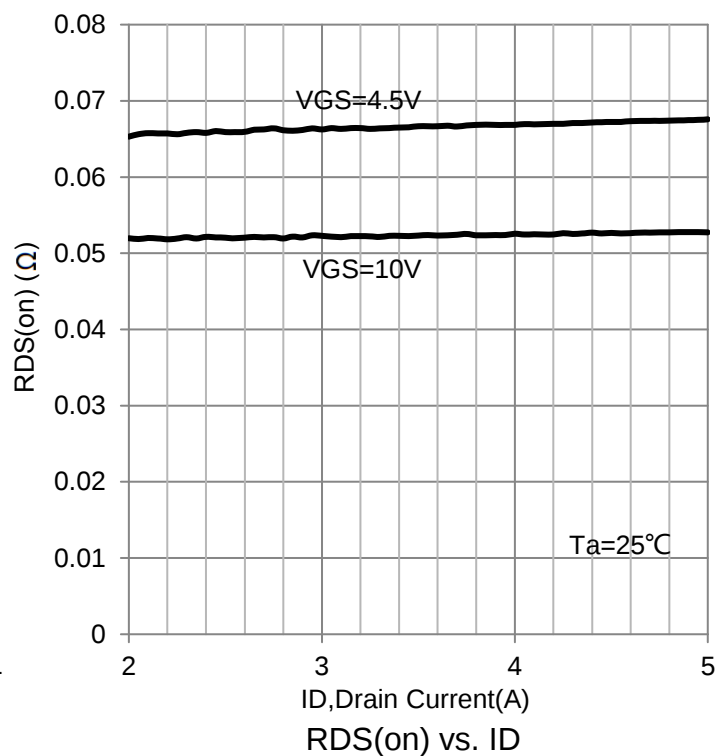
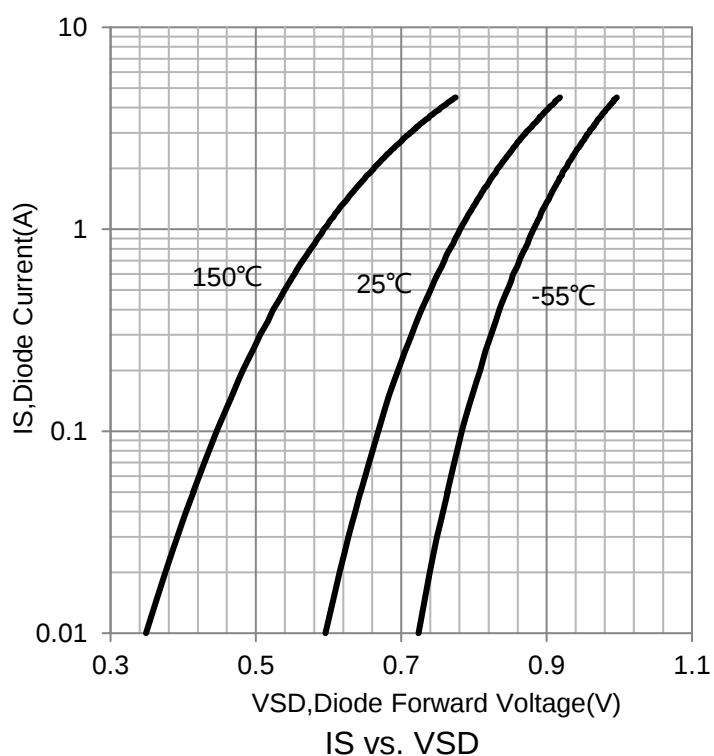
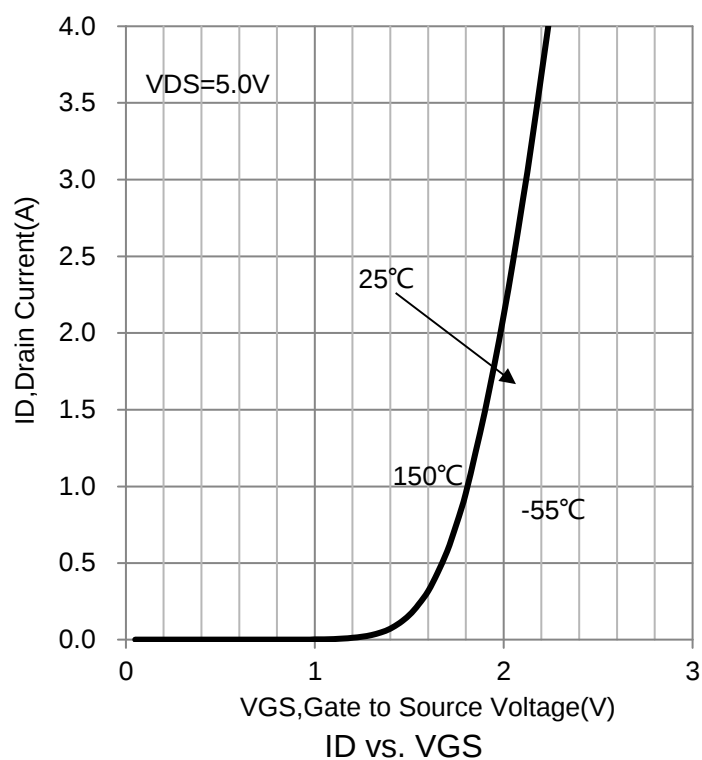
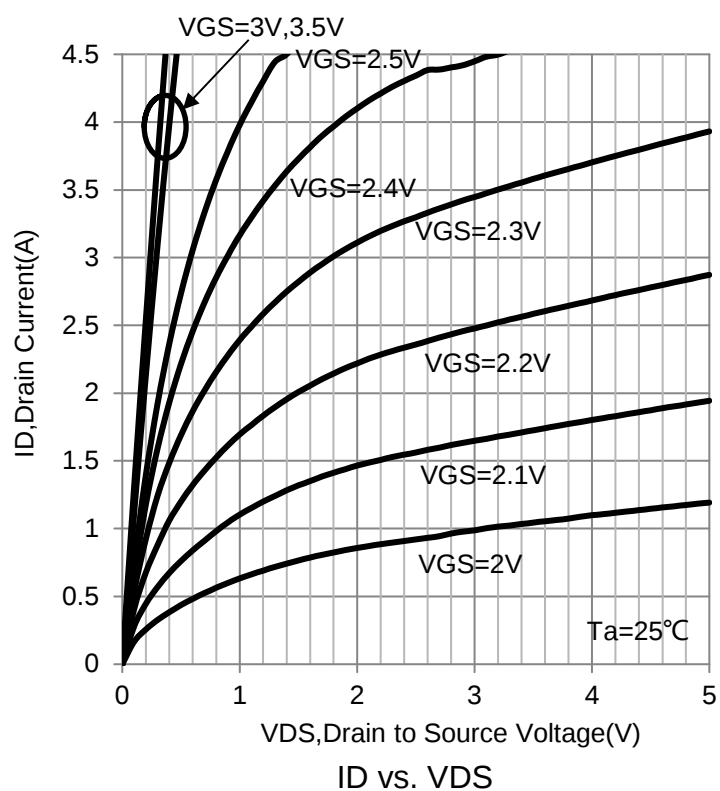
Parameter		Symbol	Typ.	Max	Unit
Thermal Resistance, Junction-to-Ambient (Note 1&4)	$t \leq 10s$	R θ JA	70	90	°C/W
	Steady State		100	125	
Maximum Junction-to-Lead	Steady State	R θ JL	63	80	

- 1.The value of R θ JA is measured with the device mounted on 1in 2 FR-4 board with 2oz. Copper, in a still air environment with TA =25°C. The value in any given application depends on the user's specific board design. The current rating is based on the $t \leq 10s$ thermal resistance rating.
- 2.Repetitive rating, pulse width limited by junction temperature.
- 3.The R θ JA is the sum of the thermal impedance from junction to lead R θ JL and lead to ambient.

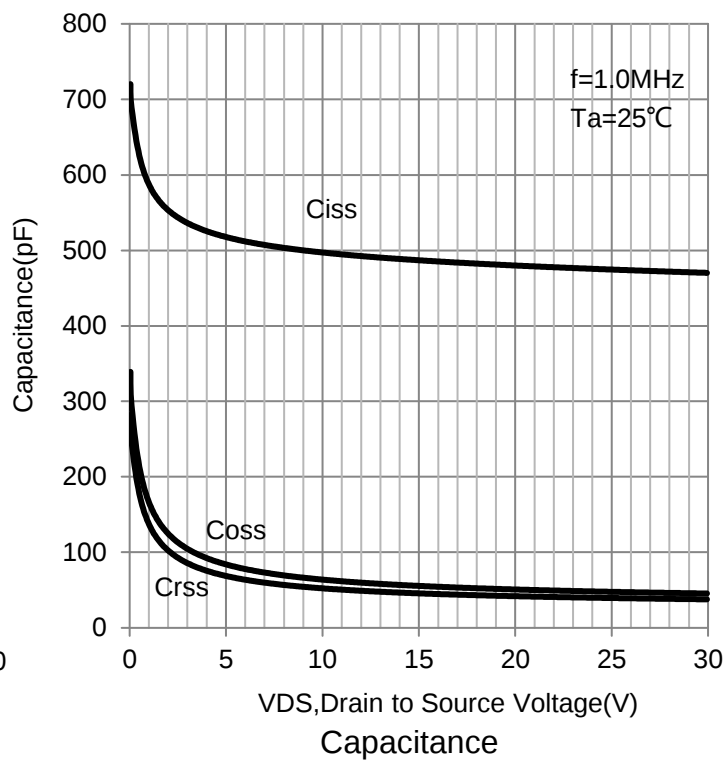
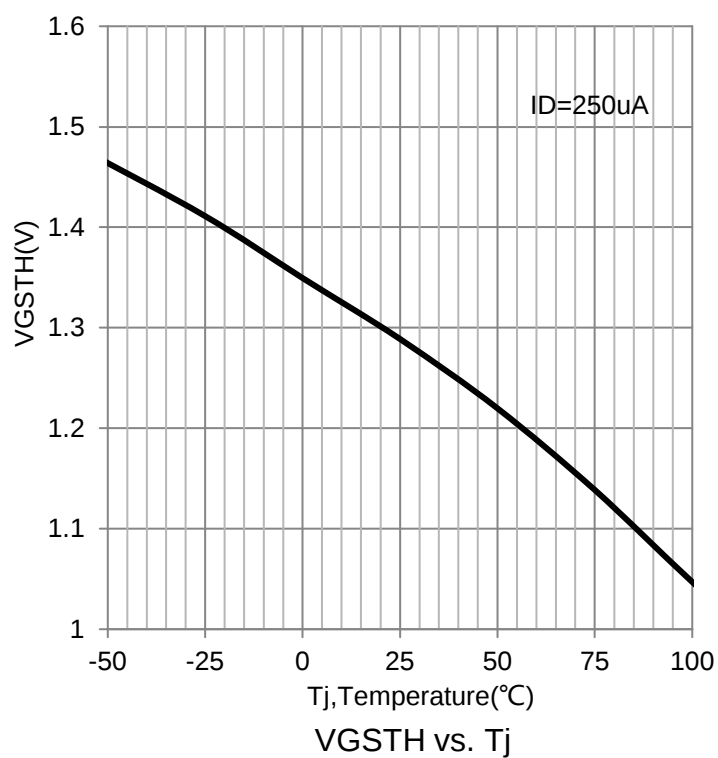
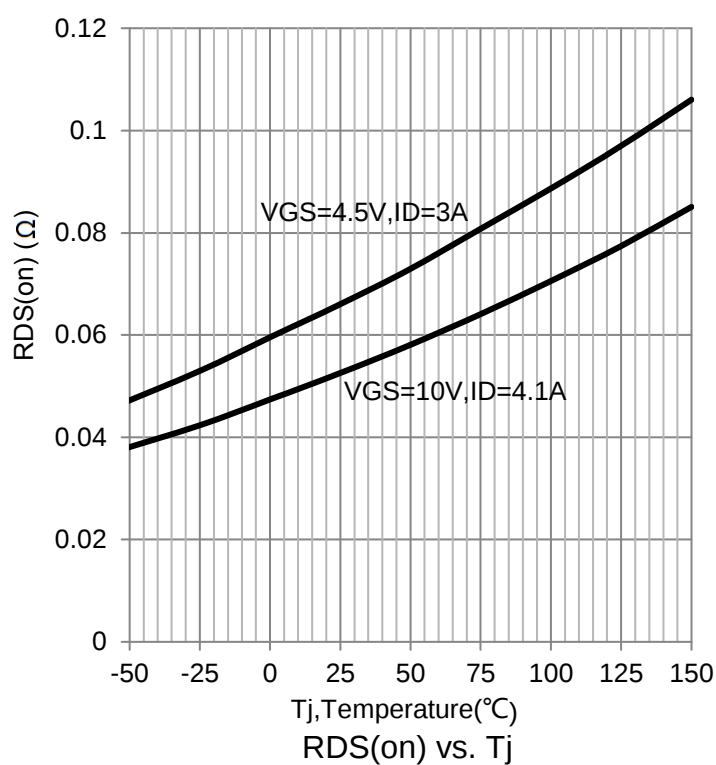
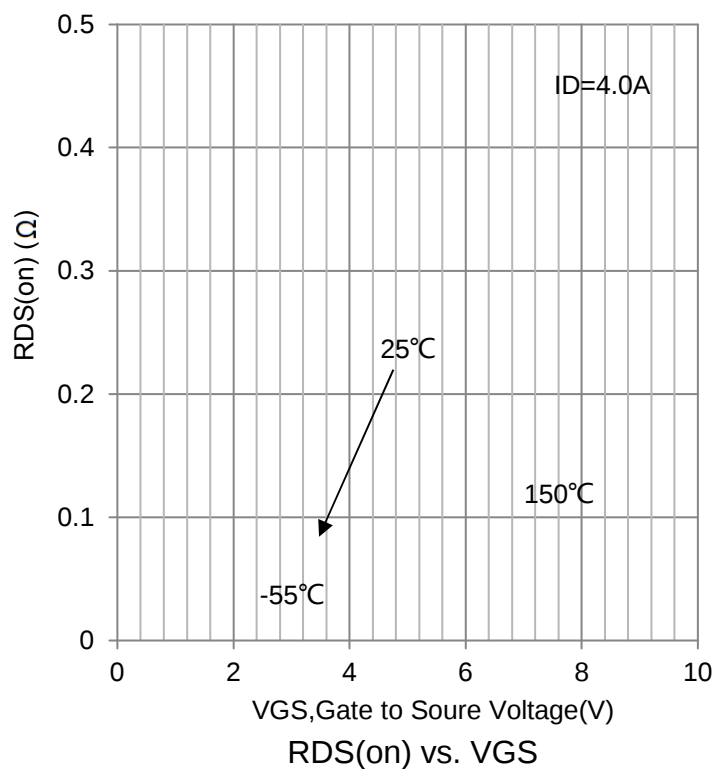
ELECTRICAL CHARACTERISTICS (Ta= 25°C)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
STATIC PARAMETERS					
Drain–Source Breakdown Voltage (VGS = 0, ID = -250μA)	VBRDSS	-30	-	-	V
Zero Gate Voltage Drain Current (VGS = 0, VDS = -24 V) (VGS = 0, VDS = -24 V, TJ =55°C)	IDSS	-	-	-1 -5	μA
Gate Leakage Current (VDS =0V, VGS =±20V)	IGSS	-	-	±100	nA
Gate Threshold Voltage (VDS = VGS, ID = -250μA)	VGS(th)	-1	-2	-3	V
On state drain current (VGS =-10V, VDS =-5V)	ID(ON)	-25			A
Static Drain–Source On–State Resistance (VGS =-10V, ID =-4.1A) (VGS =-10V, ID =-4.1A, TJ =125°C) (VGS =-4.5V, ID =-3A)	RDS(on)	- - -	- - -	70 95 100	mΩ
Forward Transconductance (VDS =-5V, ID =-4A)	gfs	-	10	-	S
Forward Voltage (VGS = 0 V, IS = -1A)	VSD	-	-0.7	-1	V
Maximum Body-Diode Continuous Current	IS	-	-	-2	A
DYNAMIC PARAMETERS					
Input Capacitance (VGS = 0 V, f = 1.0MHz, VDS= -15 V)	Ciss	-	520	625	pF
Output Capacitance (VGS = 0 V, f = 1.0MHz, VDS= -15 V)	Coss	-	100	130	
Reverse Transfer Capacitance (VGS = 0 V, f = 1.0MHz, VDS= -15 V)	Crss	-	65	90	
Gate resistance (VGS =0V, VDS =0V, f=1MHz)	Rg	3.5	7.5	11.5	Ω
SWITCHING PARAMETERS					
Total Gate Charge	(VGS =-10V, VDS =-15V, ID =-4A)	Qg(10V)	7.4	9.2	nc
Total Gate Charge		Qg(4.5V)	3.7	4.6	
Gate-Source Charge		Qgs	1.3	1.6	
Gate-Drain Charge		Qgd	1.3	2.2	
Turn-On Delay Time	(VDS = -15V, RL= 3.6 Ω, VGS = -10V, RG = 3Ω)	td(on)	-	7.5	ns
Rise Time		tr	-	5.5	
Turn-Off Delay Time		td(off)	-	19	
Fall Time		tf	-	7	
Body Diode Reverse Recovery Time (IF =-4A, dI/dt=100A/μs)		trr	8.8	11	
Body Diode Reverse Recovery Charge (IF =-4A, dI/dt=100A/μs)		Qrr	4	5.3	nc

ELECTRICAL CHARACTERISTICS CURVES



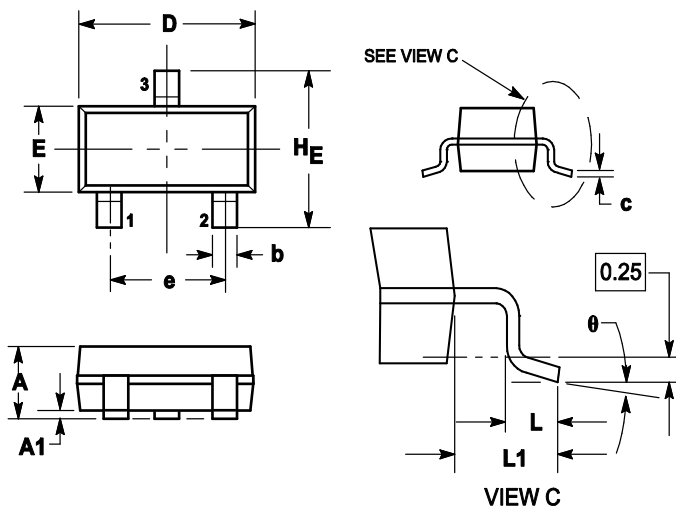
ELECTRICAL CHARACTERISTICS CURVES(Con.)



OUTLINE AND DIMENSIONS

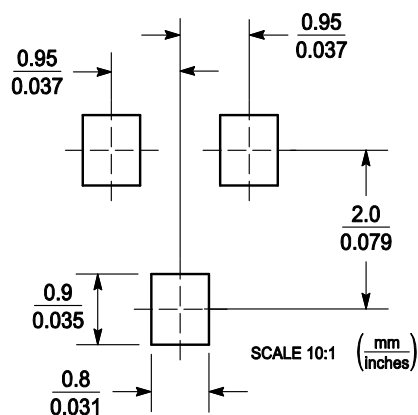
Notes:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.



DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.89	1	1.11	0.035	0.04	0.044
A1	0.01	0.06	0.1	0.001	0.002	0.004
b	0.37	0.44	0.5	0.015	0.018	0.02
c	0.09	0.13	0.18	0.003	0.005	0.007
D	2.80	2.9	3.04	0.11	0.114	0.12
E	1.20	1.3	1.4	0.047	0.051	0.055
e	1.78	1.9	2.04	0.07	0.075	0.081
L	0.10	0.2	0.3	0.004	0.008	0.012
L1	0.35	0.54	0.69	0.014	0.021	0.029
H _E	2.10	2.4	2.64	0.083	0.094	0.104
θ	0°	---	10°	0°	---	10°

SOLDERING FOOTPRINT



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