

# SIL3407-TP Datasheet

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DiGi Electronics Part Number	SIL3407-TP-DG
Manufacturer	<a href="#">Micro Commercial Co</a>
Manufacturer Product Number	SIL3407-TP
Description	MOSFET P-CH 30V 4.1A SOT23-6L
Detailed Description	P-Channel 30 V 4.1A (Tj) 350mW Surface Mount SO T-23-6L



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## Purchase and inquiry

Manufacturer Product Number:

SIL3407-TP

Series:

-

FET Type:

P-Channel

Drain to Source Voltage (Vdss):

30 V

Drive Voltage (Max Rds On, Min Rds On):

4.5V, 10V

Vgs(th) (Max) @ Id:

3V @ 250µA

Input Capacitance (Ciss) (Max) @ Vds:

700 pF @ 15 V

Power Dissipation (Max):

350mW

Mounting Type:

Surface Mount

Package / Case:

SOT-23-6

Manufacturer:

Micro Commercial Co

Product Status:

Active

Technology:

MOSFET (Metal Oxide)

Current - Continuous Drain (Id) @ 25°C:

4.1A (Tj)

Rds On (Max) @ Id, Vgs:

60mOhm @ 4.1A, 10V

Vgs (Max):

±20V

FET Feature:

-

Operating Temperature:

-55°C ~ 150°C (Tj)

Supplier Device Package:

SOT-23-6L

Base Product Number:

SIL3407

## Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8541.21.0095

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99

## Features

- Trench LV MOSFET technology
- Moisture Sensitivity Level 1
- Halogen Free. "Green" Device (Note 1)
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

## Maximum Ratings

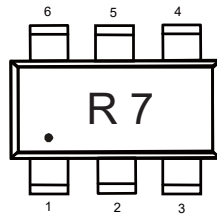
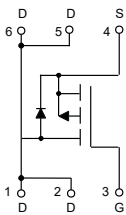
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 78°C/W Junction to Ambient (Note 2)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	-30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	$T_A=25^\circ\text{C}$	-4.1
		$T_A=70^\circ\text{C}$	-3.2
Pulsed Drain Current (Note 3)	$I_{DM}$	-12	A
Total Power Dissipation (Note 4)	$P_D$	1.6	W

Note:

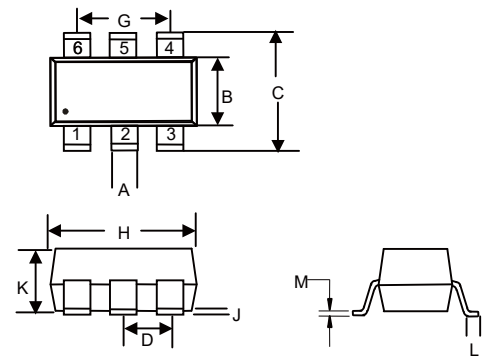
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of  $R_{\theta JA}$  is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz Copper, in a still air environment with  $T_A=25^\circ\text{C}$ .
3. Repetitive rating; pulse width limited by max. junction temperature.
4.  $P_d$  is based on max. junction temperature, using junction-ambient thermal resistance.

## Internal Structure and Marking Code



# P-CHANNEL MOSFET

## SOT23-6L



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.012	0.020	0.30	0.50	
B	0.051	0.070	1.30	1.80	
C	0.087	0.126	2.50	3.10	
D	0.037		0.95		TYP.
G	0.074		1.90		TYP.
H	0.106	0.122	2.70	3.10	
J	0.002	0.006	0.05	0.15	
K	0.030	0.051	0.75	1.30	
L	0.012	0.024	0.30	0.60	
M	0.003	0.008	0.08	0.22	

## Electrical Characteristics @ 25°C (Unless Otherwise Specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30			V
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-30V, V_{GS}=0V$			-1	$\mu A$
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1	-1.4	-3	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-4.1A$		39	50	m $\Omega$
		$V_{GS}=-4.5V, I_D=-3A$		54	70	
Gate Resistance	$R_g$	f=1MHz, Open Drain		10		$\Omega$
Forward tranconductance	$g_{FS}$	$V_{DS}=-5V, I_D=-4A$		11		S
<b>Diode Characteristics</b>						
Continuous Body Diode Current	$I_S$				-4.1	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=-4.1A$			-1.2	V
Reverse Recovery Time	$t_{rr}$	$I_S=-2A, di/dt=100A/\mu s$		24		ns
Reverse Recovery Charge	$Q_{rr}$			4.3		nC
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=-15V, V_{GS}=0V, f=1MHz$		581		pF
Output Capacitance	$C_{oss}$			72		
Reverse Transfer Capacitance	$C_{rss}$			62		
Total Gate Charge	$Q_g$	$V_{DS}=-15V, V_{GS}=-10V, I_D=-2A$		12.7		pF
Gate-Source Charge	$Q_{gs}$			1.5		
Gate-Drain Charge	$Q_{gd}$			2		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=-10V, V_{DD}=-15V, R_G=3\Omega, I_D=-2A$		6.3		ns
Turn-On Rise Time	$t_r$			3.6		
Turn-Off Delay Time	$t_{d(off)}$			23.7		
Turn-Off Fall Time	$t_f$			9.3		

Curve Characteristics

Fig. 1 Typical Output Characteristics

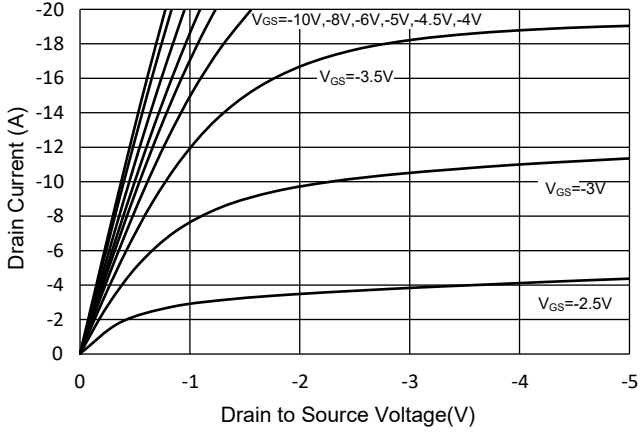


Fig.2 Transfer Characteristic

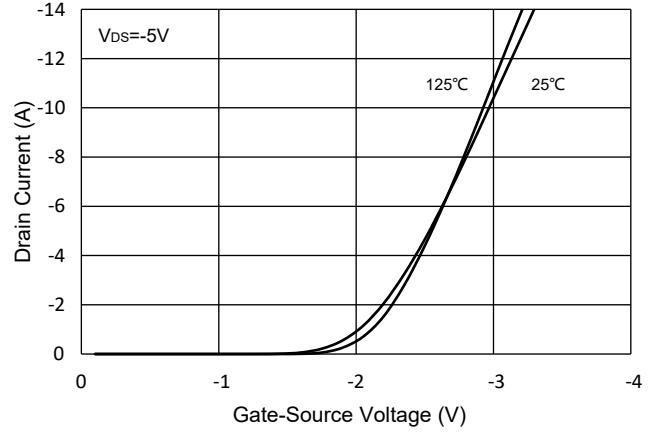


Fig.3 R<sub>ds(on)</sub>-V<sub>gs</sub>

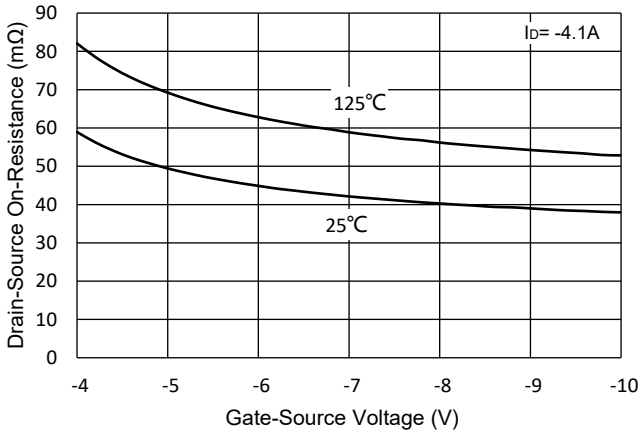


Fig.4 R<sub>DS(ON)</sub>-I<sub>D</sub>

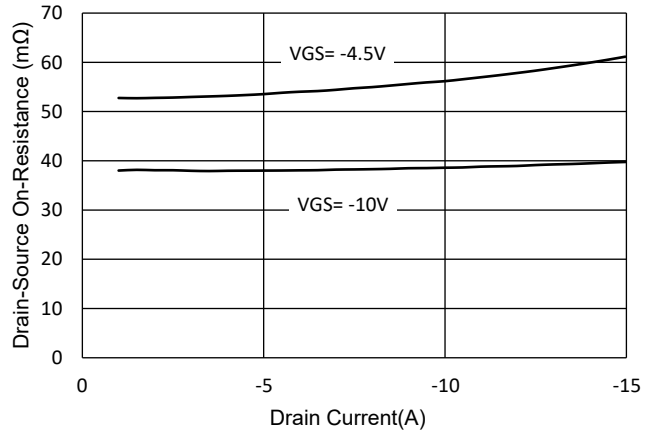


Fig.5 Capacitance Characteristics

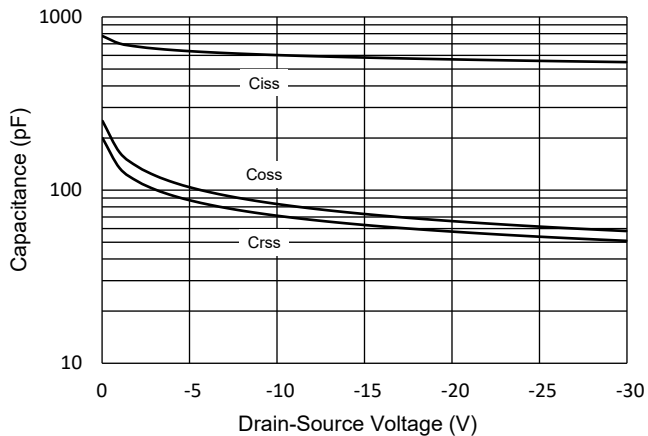
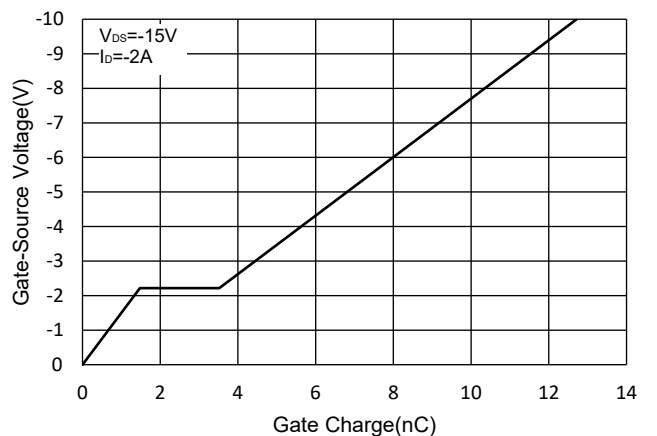


Fig.6 Gate Charge



Curve Characteristics

Fig.7 Normalized Threshold Voltage

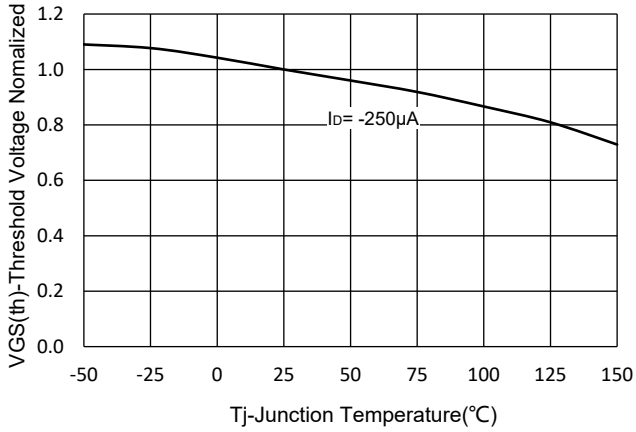


Fig.8 Normalized On Resistance Characteristics

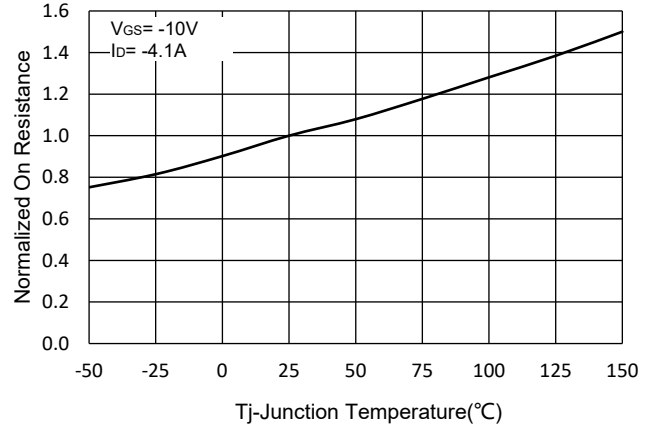


Fig.9 IS-VSD

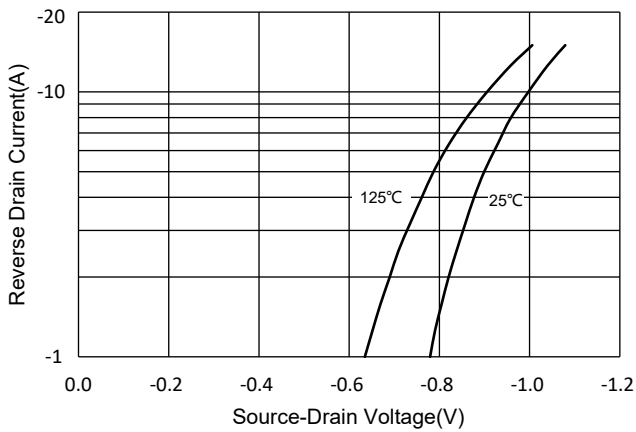


Fig.10 Drain Current

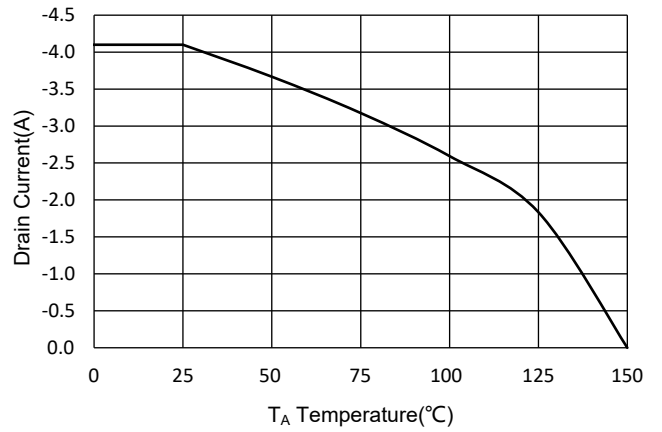
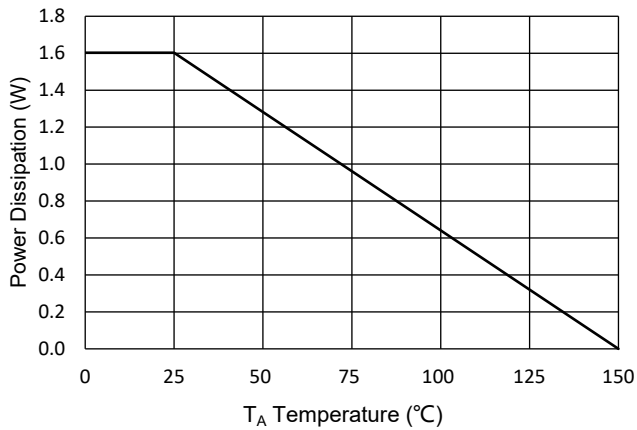


Fig.11 PD Dissipation



Curve Characteristics

Fig.12 Safe Operation Area

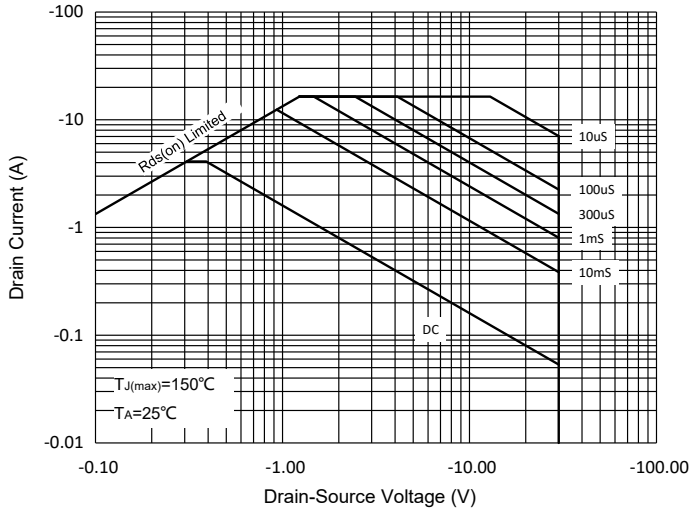
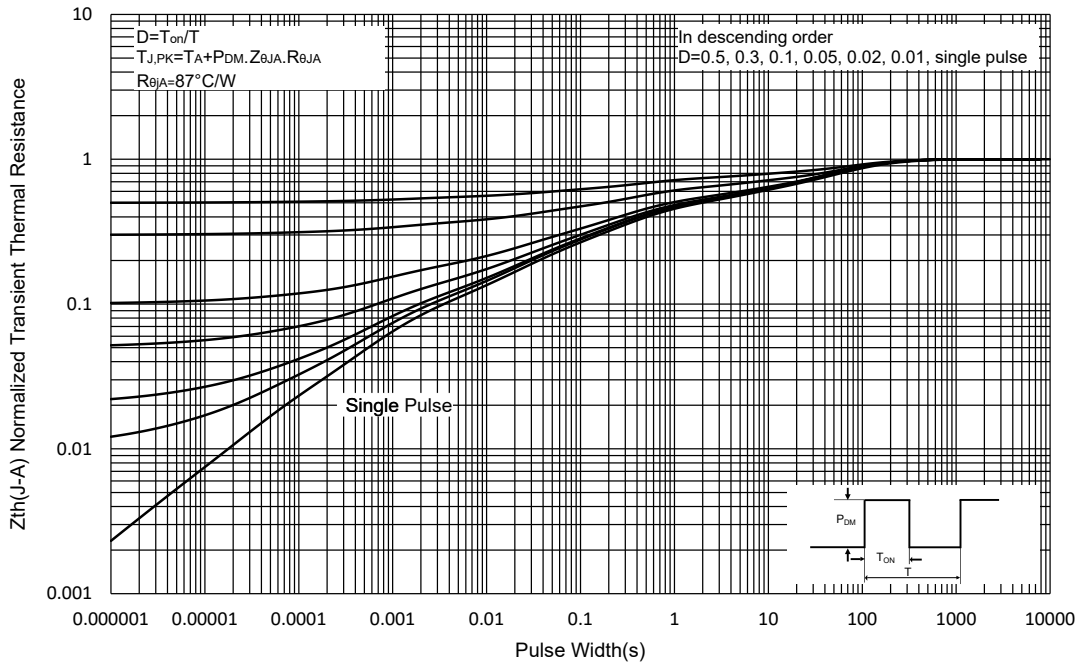


Fig.13 Normalized Transient Thermal Impedance



## Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 3Kpcs/Reel

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