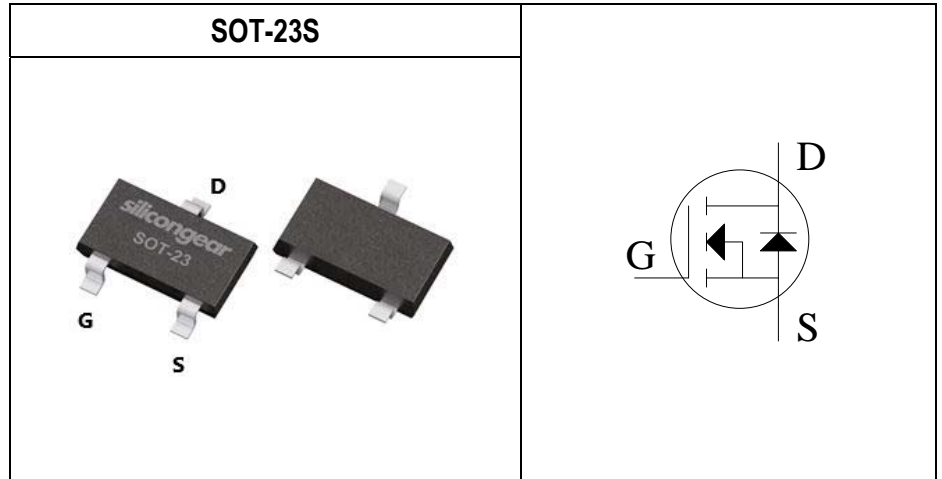


Parameter	Value	Unit
V_{DS}	20	V
$R_{DS(ON) max. V_{GS}=10V}$	58.3	m Ω
$R_{DS(ON) max. V_{GS}=4.5V}$	70.2	m Ω
$R_{DS(ON) max. V_{GS}=2.5V}$	96	m Ω
I_D	3.0	A
$Q_g 4.5V$	2.5	nC
Q_{gd}	0.7	nC
Q_{sw}	1.1	nC



Features	Application
<ul style="list-style-type: none"> • Low On-Resistance $R_{DS(on)}$ • Low Input Capacitance • Low Gate Charge • Pb-free lead plating; RoHS compliant 	<ul style="list-style-type: none"> • Lithium-Ion Secondary Batteries • Load Switch • DC-DC converters and Off-line UPS

Ordering Information

Ordering Code	RoHS Status	Package	Package Code	Packing	Quantity
SGN2030V	Halogen-Free	SOT-23S	V	Tape & Reel	3,000

Absolute Maximum Ratings ($T_J=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit	
Drain-Source Voltage	V_{DS}	20	V	
Gate-Source Voltage	V_{GS}	± 12	V	
Drain Current-Continuous ^{Note 2}	I_D	$T_A=25^\circ\text{C}$	3.0	A
		$T_A=70^\circ\text{C}$	2.4	A
Drain Current-Pulsed ^{Note 3}	I_{DM}	12	A	
Avalanche Current	I_{AR}	2.5	A	
Single Pulse Avalanche Energy ^{Note 4}	E_{AS}	3.1	mJ	
Maximum Power Dissipation	P_D	$T_A=25^\circ\text{C}$	0.9	W
		$T_A=70^\circ\text{C}$	0.5	W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^\circ\text{C}$	

Thermal Resistance Ratings

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Thermal resistance, Junction-Case ^{Note 5}	$R_{\theta JC}$	Steady State	-	-	36.6	$^\circ\text{C/W}$
Thermal resistance, Junction-Ambient ^{Note 5}	$R_{\theta JA}$	Steady State	-	-	158.3	$^\circ\text{C/W}$

Notes:

1. Limited by silicon chip capability and $R_{\theta JC}$ junction-to-case thermal resistance.
2. The maximum current rating is limited by package and $R_{\theta JA}$ junction-to-ambient thermal resistance.
3. Must be ensure junction temperature does not exceed 150-degree C. (Pulse Width $\leq 100\mu\text{s}$, Duty $\leq 2\%$)
4. Limited by T_{Jmax} , starting $T_J=25^\circ\text{C}$, $L=1\text{mH}$, $R_g=25\Omega$, $I_D=2.5\text{A}$, $V_{GS}=10\text{V}$.
5. The value of thermal resistance is measured with the single device put on cooling plate under a still air environment temperature is 25 degree C based on JEDEC standard JESD51-14 and JESD51-2a. Thermal resistance obtained depends on the user's specific board design and given application.

Electrical Characteristics (T_J=25°C unless otherwise noted)

STATIC CHARACTERISTICS						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _{DS} =250μA	20	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =20V, V _{GS} =0V	-	-	1	μA
		V _{DS} =20V, V _{GS} =0V, T _J =125°C	-	-	100	μA
Gate-Body Leakage	I _{GSS}	V _{GS} =±12V, V _{DS} =0V	-	-	±100	nA

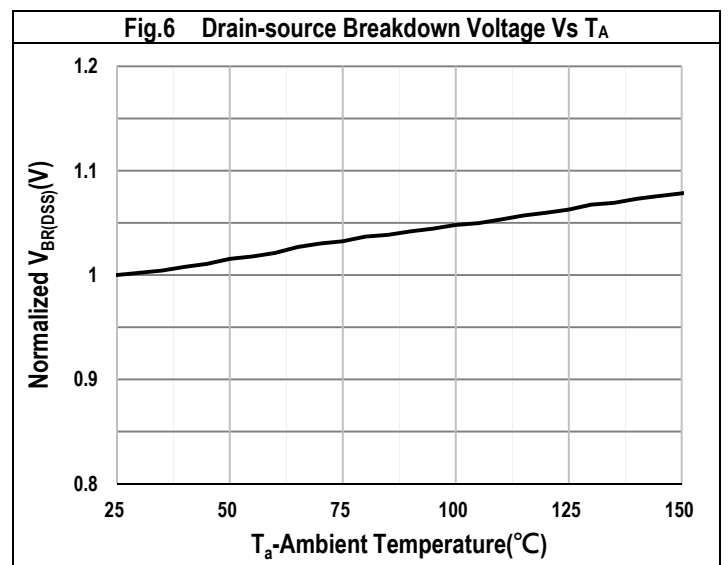
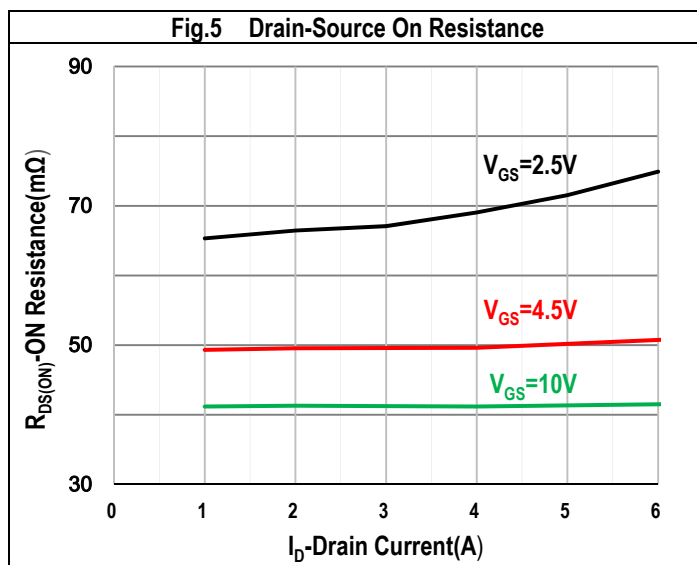
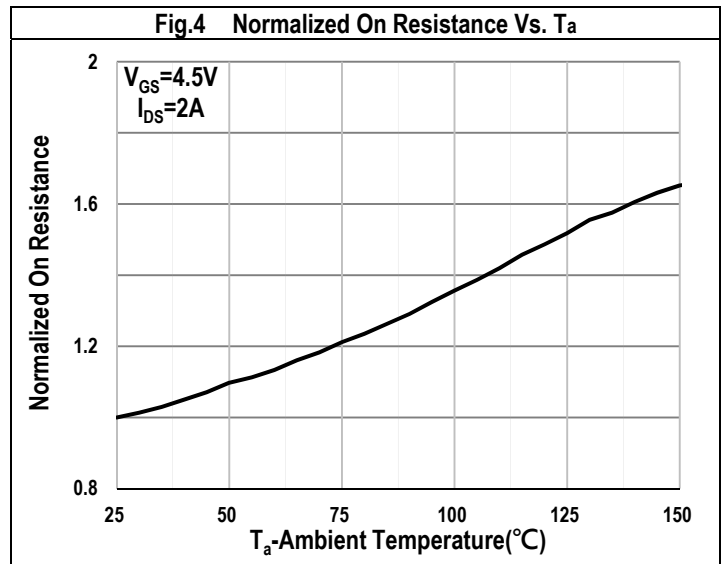
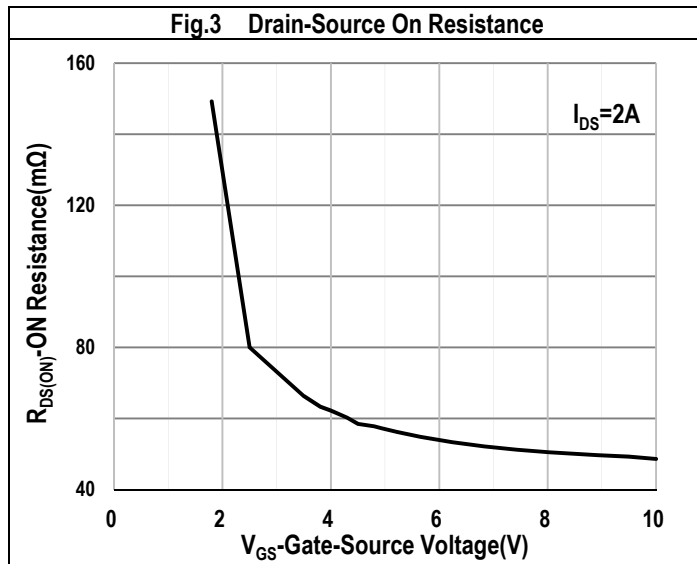
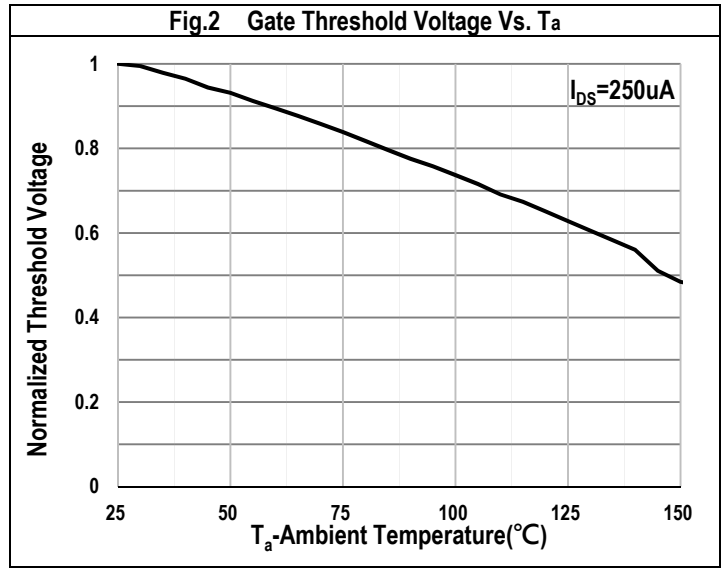
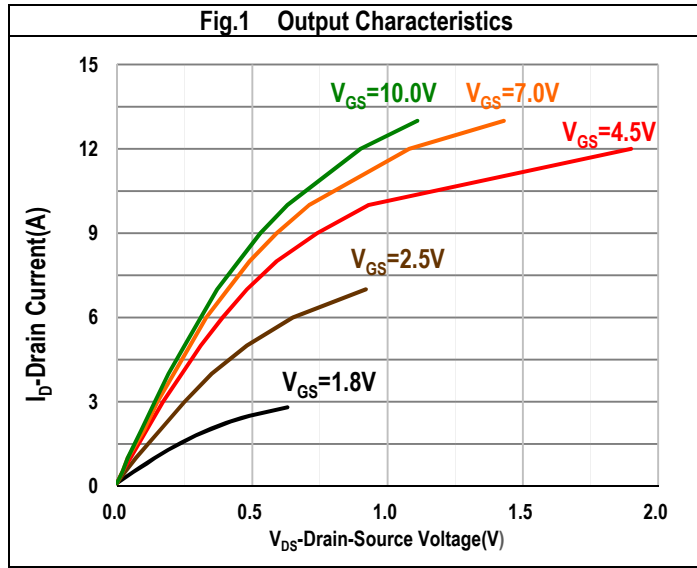
STATIC CHARACTERISTICS						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _{DS} =250μA	0.3	0.6	0.9	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _{DS} =3A	-	48.6	58.3	mΩ
		V _{GS} =4.5V, I _{DS} =2A	-	58.5	70.2	mΩ
		V _{GS} =2.5V, I _{DS} =1A	-	80	96	mΩ
Gate Resistance	R _g	V _{GS} =0V, V _{DS} =0V, f=1MHz	-	0.3	-	Ω
Forward Transconductance	g _{fs}	V _{DS} =5V, I _{DS} =3A	-	1.8	-	S

DYNAMIC CHARACTERISTICS						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Input Capacitance	C _{iss}	V _{DD} =20V, V _{DS} =10V, V _{GS} =0V, f=1MHz	-	134.8	-	pF
Output Capacitance	C _{oss}	V _{DD} =20V, V _{DS} =10V, V _{GS} =0V, f=1MHz	-	29.3	-	pF
Reverse Transfer Capacitance	C _{rss}	V _{DD} =20V, V _{DS} =10V, V _{GS} =0V, f=1MHz	-	27	-	pF
Turn-On Delay Time	T _{d(on)}	V _{DS} =10V, V _{GS} =10V, I _{DS} =2A, R _{GEN} =3Ω	-	2.7	-	nS
Rise Time	t _r	V _{DS} =10V, V _{GS} =10V, I _{DS} =2A, R _{GEN} =3Ω	-	7.7	-	nS
Turn-Off Delay Time	T _{d(off)}	V _{DS} =10V, V _{GS} =10V, I _{DS} =2A, R _{GEN} =3Ω	-	8.9	-	nS
Fall Time	t _f	V _{DS} =10V, V _{GS} =10V, I _{DS} =2A, R _{GEN} =3Ω	-	1.1	-	nS

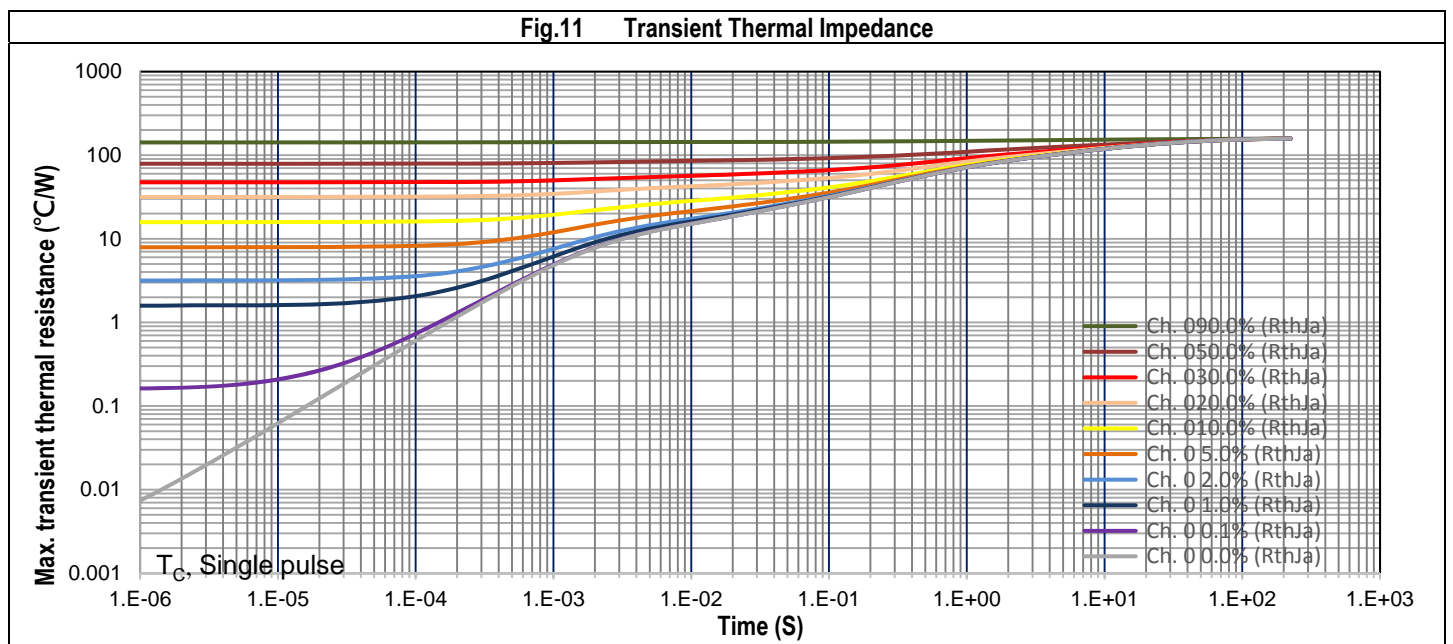
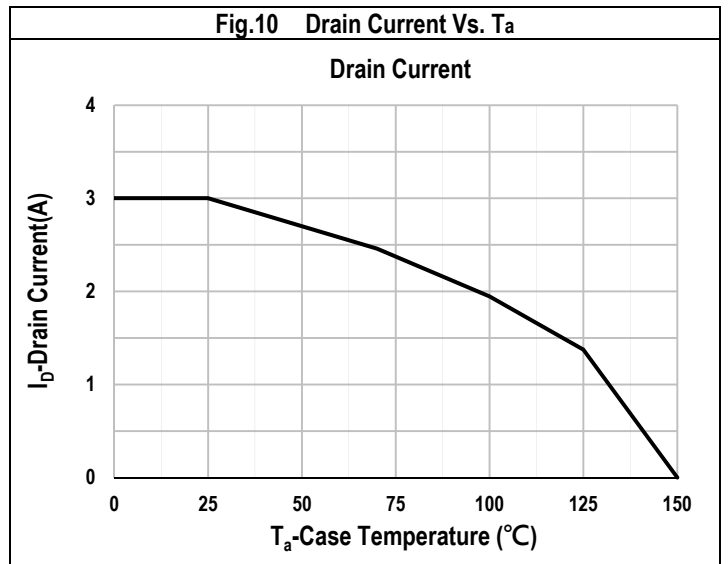
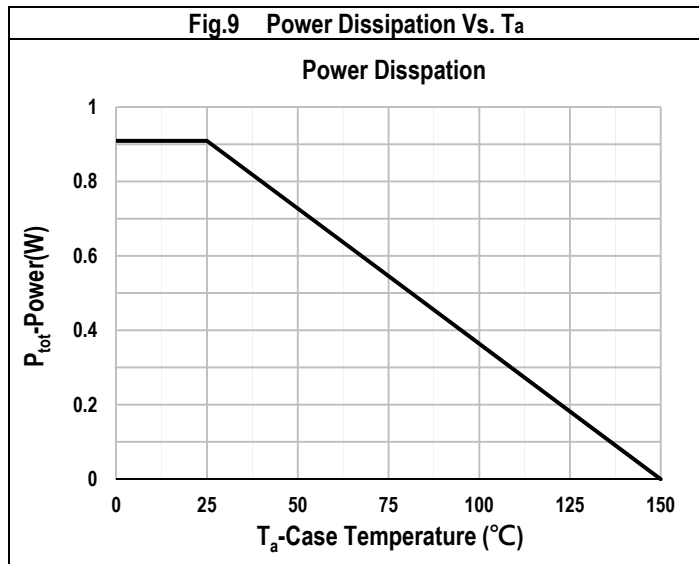
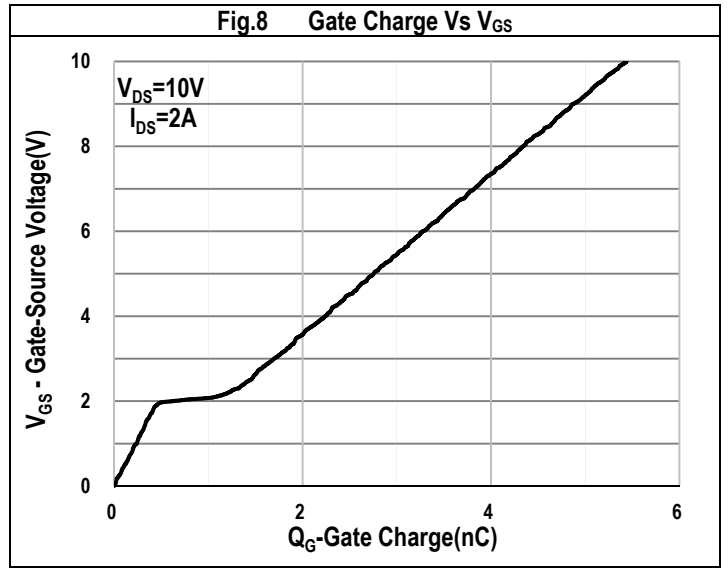
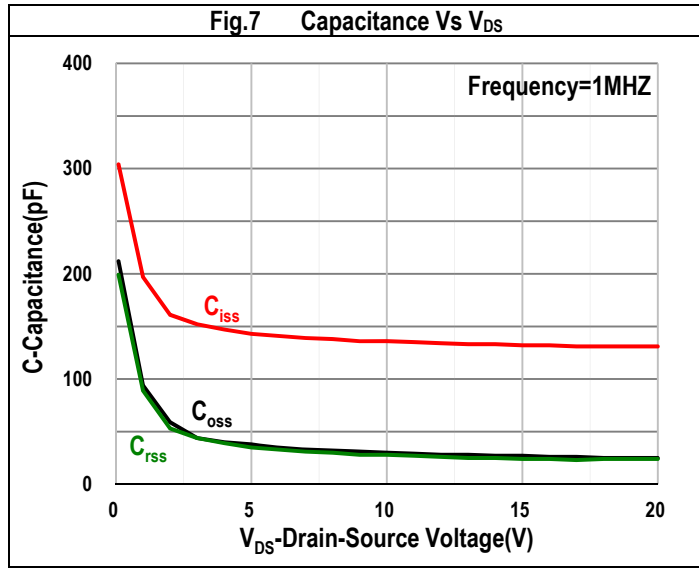
GATE CHARGE CHARACTERISTICS						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Gate to Source Gate Charge	Q _{gs}	V _{DD} =10V, I _D =2A, V _{GS} =0 to 10V	-	0.5	-	nC
Gate charge at threshold	Q _{g(th)}	V _{DD} =10V, I _D =2A, V _{GS} =0 to 10V	-	0.1	-	nC
Gate to Drain Charge	Q _{gd}	V _{DD} =10V, I _D =2A, V _{GS} =0 to 10V	-	0.7	-	nC
Switching charge	Q _{sw}	V _{DD} =10V, I _D =2A, V _{GS} =0 to 10V	-	1.1	-	nC
Gate charge total	Q _{g 10V}	V _{DD} =10V, I _D =2A, V _{GS} =0 to 10V	-	5.4	-	nC
	Q _{g 4.5V}	V _{DD} =10V, I _D =2A, V _{GS} =0 to 4.5V	-	2.5	-	nC
	Q _{g 2.5V}	V _{DD} =10V, I _D =2A, V _{GS} =0 to 2.5V	-	1.4	-	nC
Gate plateau voltage	V _{plateau}	V _{DD} =10V, I _D =2A, V _{GS} =0 to 10V	-	2	-	V
Gate charge total, sync. FET (Q _g - Q _{gd})	Q _{g(sync)}	V _{DS} =0.1V, V _{GS} =0 to 10V	-	4.7	-	nC

DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Body Diode continuous forward current	I _S	T _C =25°C	-	-	3	A
Body Diode pulse current	I _{SM}	T _C =25°C	-	-	12	A
Body Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =2A	-	0.8	1	V
Body Diode Reverse Recovery Time	t _{rr}	V _{DD} =16V, I _F =2A, di/dt=100A/μs	-	6.9	-	nS
Body Diode Reverse Recovery Charge	Q _{rr}	V _{DD} =16V, I _F =2A, di/dt=100A/μs	-	2	-	nC

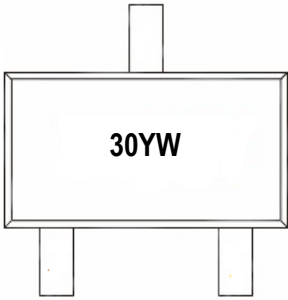
Typical Operating Characteristics



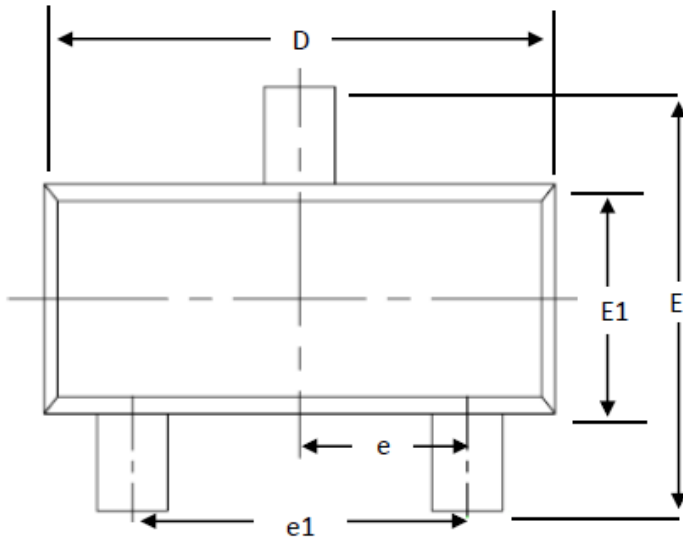
Typical Operating Characteristics (Cont.)



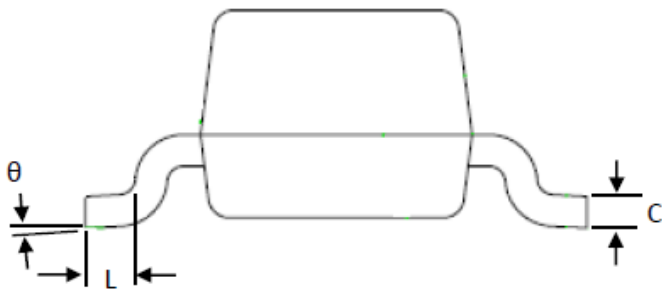
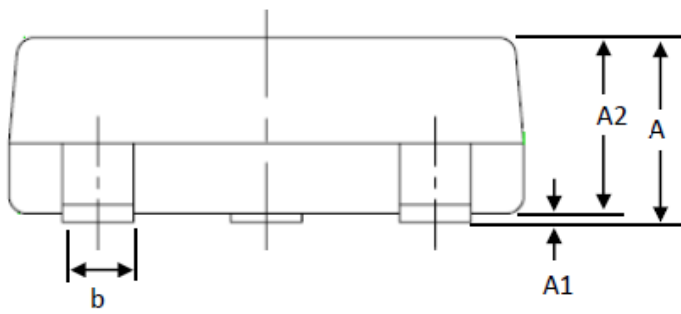
Marking Information

SOT-23S-3L (V)	Marking Rule
<p data-bbox="129 353 296 389">Laser Marking</p>  <p>The diagram shows a top-down view of a SOT-23S-3L MOSFET package. It is a rectangular package with three leads: one on the top edge and two on the bottom edge. The marking '30YW' is printed in the center of the top surface.</p>	<p data-bbox="807 353 1023 389">Line1 : Date Code</p> <p data-bbox="807 398 879 434">30YW</p> <p data-bbox="807 488 1015 524">30 : roduct Code</p> <p data-bbox="807 533 983 568">Y : Year Code</p> <p data-bbox="807 577 999 613">W : Week Code</p>

Package of Dimension

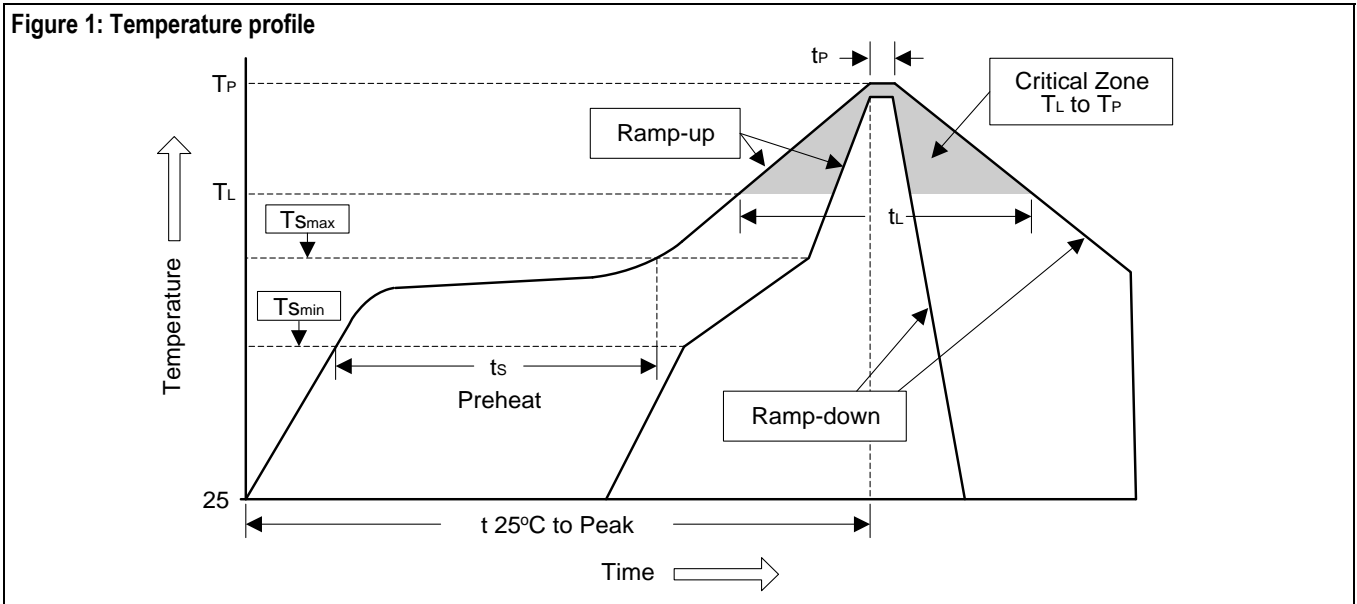


Symbol	Min	Nor	Max
A	0.90	1.05	1.20
A1	0.00	0.05	0.10
A2	0.90	1.01	1.12
b	0.30	0.40	0.50
c	0.08	0.14	0.20
D	2.80	2.90	3.00
E	2.30	2.65	3.00
E1	1.20	1.45	1.70
e	0.90	0.95	1.00
e1	1.90 Ref.		
L	0.30	0.43	0.55
θ	0°	5°	10°



Soldering Methods for Silicongear's Products

1. Storage environment: Temperature=10°C to 35°C Humidity=65%±15%
2. Reflow soldering of surface-mount devices



Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Average ramp-up rate (T _L to T _P)	<3°C/sec	<3°C/sec
Preheat		
- Temperature Min (T _{smmin})	100°C	150°C
- Temperature Max (T _{smmax})	150°C	200°C
- Time (min to max) (ts)	60 to 120 sec	60 to 180 sec
T _{smmax} to T _L		
- Ramp-up Rate	<3°C/sec	<3°C/sec
Time maintained above:		
- Temperature (T _L)	183°C	217°C
- Time (t _L)	60 to 150 sec	60 to 150 sec
Peak Temperature (T _P)	240°C +0/-5°C	260°C +0/-5°C
Time within 5°C of actual Peak Temperature (t _p)	10 to 30 sec	20 to 40 sec
Ramp-down Rate	<6°C/sec	<6°C/sec
Time 25°C to Peak Temperature	<6 minutes	<8 minutes

3. Flow (wave) soldering (solder dipping)

Products	Peak Temperature	Dipping Time
Pb devices.	245°C ±5°C	5sec ±1sec
Pb-Free devices.	260°C +0/-5°C	5sec ±1sec

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