

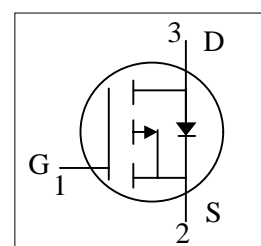
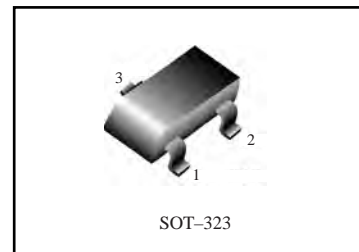
20V P-Channel Enhancement-Mode MOSFET

FEATURE

Leading Trench Technology for Low $R_{DS(on)}$ Extending Battery Life

APPLICATIONS

- High Side Load Switch
- Charging Circuit
- Single Cell Battery Applications such as Cell Phones, Digital Cameras ,PDAs, etc



MARKING: TS1

Maximum ratings ($T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	- 20	V
Gate-Source Voltage	V_{GS}	± 8.0	
Continuous Drain Current	I_D	-1.4	A
Pulsed Drain Current ($t_p=10\mu\text{s}$)	I_{DM}	-3.0	
Power Dissipation	P_D	0.29	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	431	$^\circ\text{C}/\text{W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-50 ~+150	

Electrical characteristics (T_a=25°C unless otherwise noted)

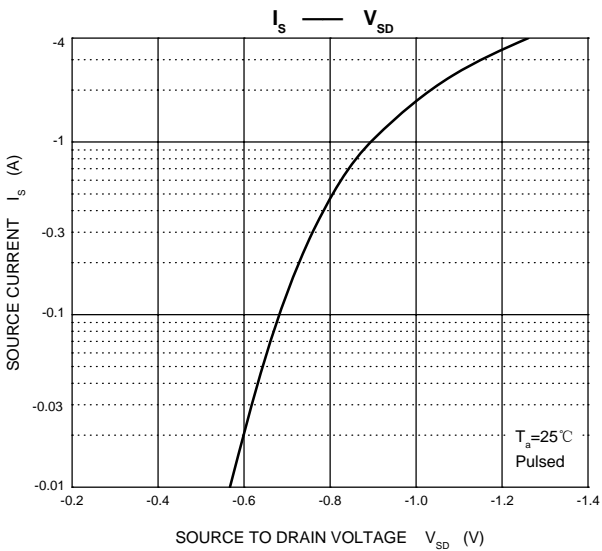
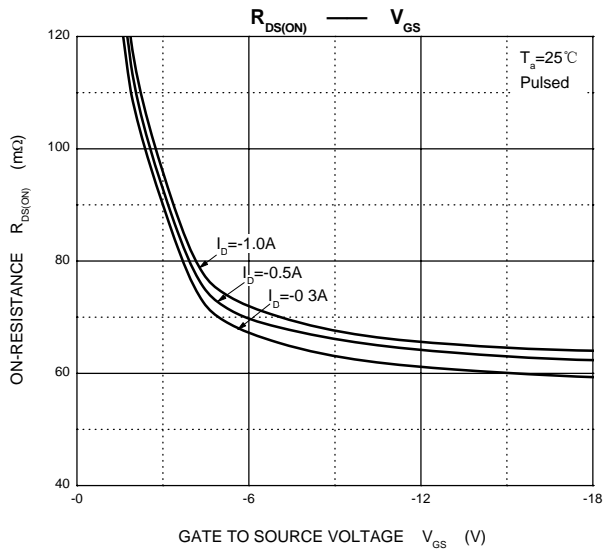
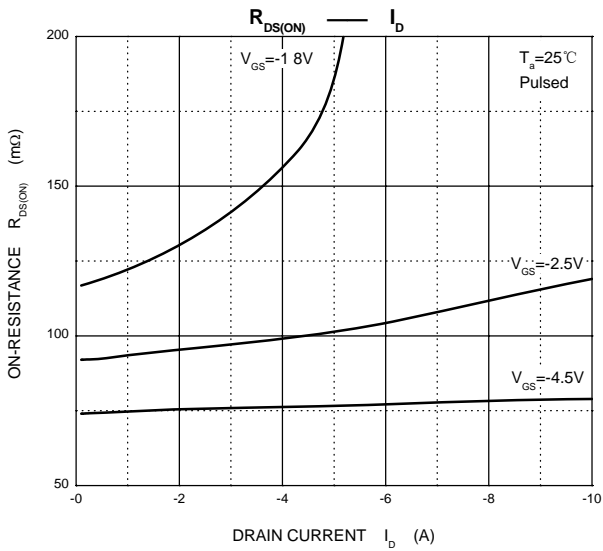
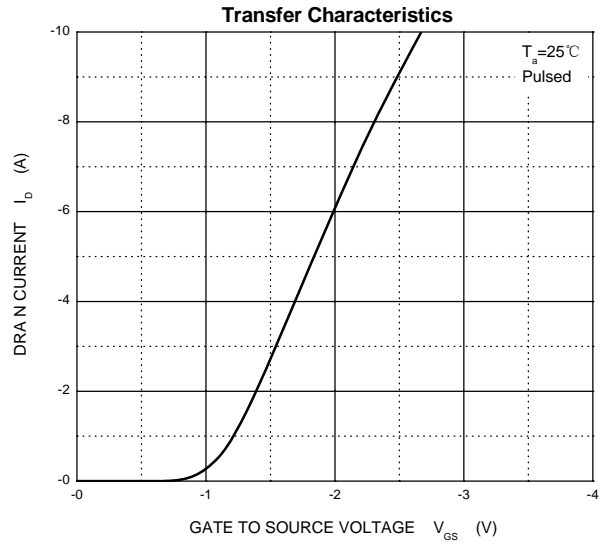
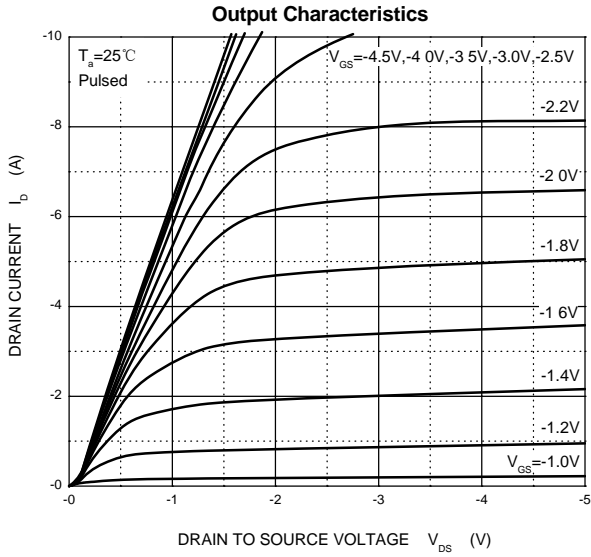
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
OFF CHARACTERISSTICS						
Drain-Source Breakdown Voltage	V _{DSS}	V _{GS} = 0V, I _D = -250μA	-20			V
Gate-Source Leakage	I _{GSS}	V _{DS} = 0V, V _{GS} = ±8V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -20V, V _{GS} = 0V			-1.0	μA
OFF CHARACTERISSTICS (note 1)						
Gate-Source Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-0.45	-0.7		V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} = -4.5V, I _D = -1.0A			100	mΩ
		V _{GS} = -2.5V, I _D = -0.5A			140	
		V _{GS} = -1.8V, I _D = -0.3A			210	
CHARGES AND CAPACITANCES (note 3)						
Input Capacitance	C _{iss}	V _{DS} = -8.0V, V _{GS} = 0V, f = 1MHz		640		pF
Output Capacitance	C _{oss}			120		
Reverse Transfer Capacitance	C _{rss}			82		
SWITCHING CHARACTERISSTICS (note 2,3)						
Turn-On Delay Time	t _{d(on)}	V _{GS} = -4.5V, V _{DD} = -4.0V, I _D = -1.0A, R _G = 6.2Ω		6.2		ns
Rise Time	t _r			15		
Turn-Off Delay Time	t _{d(off)}			26		
Fall Time	t _f			18		
Drain-source Body diode characteristics						
Forward Diode Voltage	V _{SD}	V _{GS} = 0V, I _S = -0.3A		-0.62	-1.2	V

Notes :

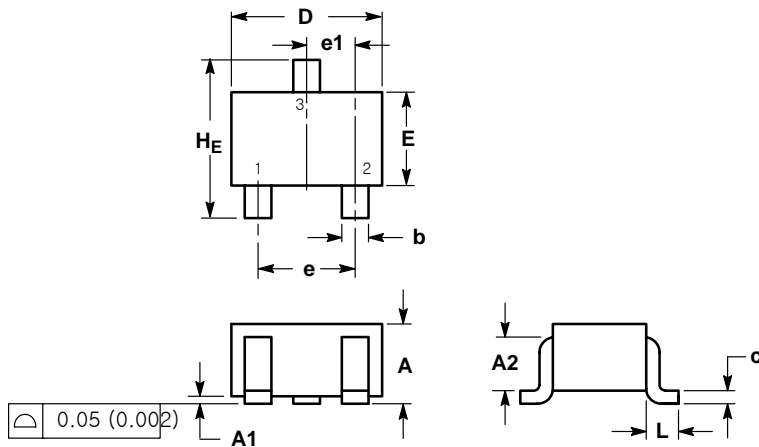
1. Pulse Test : pulse width ≤ 300μs, duty cycle ≤ 2%.
2. Switching characteristics are independent of operating junction temperatures.
3. These parameters have no way to verify.



Typical Characteristics



SC-70 / SOT-323



DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.85	0.95	1.10	0.033	0.035	0.043
A1	0.00	0.05	0.10	0.000	0.002	0.004
A2	0.7 REF			0.028 REF		
b	0.30	0.35	0.40	0.012	0.014	0.016
c	0.10	0.18	0.25	0.004	0.007	0.010
D	2.00	2.10	2.20	0.079	0.083	0.087
E	1.15	1.24	1.35	0.045	0.049	0.053
e	1.20	1.30	1.40	0.047	0.051	0.055
e1	0.65 BSC			0.026 BSC		
L	0.425 REF			0.017 REF		
HE	2.15	2.30	2.45	0.085	0.091	0.096

SOLDERING FOOTPRINT*

