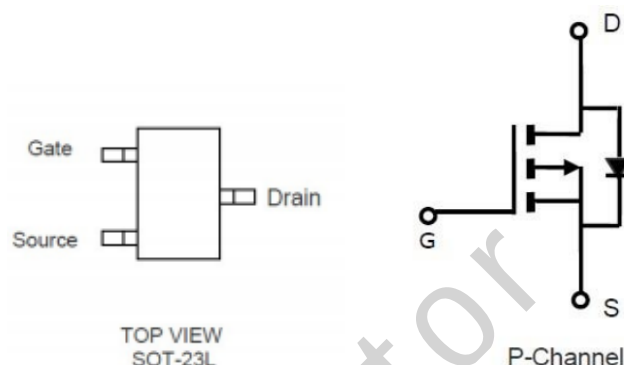


FEATURE

- ◆ -30V/-5.6A, $R_{DS(ON)}=37m\Omega$ (typ.)@ $V_{GS}=-10V$
- ◆ -30V/-4.3A, $R_{DS(ON)}=52m\Omega$ (typ.)@ $V_{GS}=-4.5V$
- ◆ Super high design for extremely low $R_{DS(ON)}$
- ◆ Exceptional on-resistance and Maximum DC current capability
- ◆ Full RoHS compliance
- ◆ SOT23-3L package design



DESCRIPTION

The 8013 is the P-Channel logic enhancement mode power field effect transistor is produced using high cell density advanced trench technology to provide excellent $R_{DS(ON)}$.

This device is suitable for use as a load switch or in PWM and gate charge for most of the synchronous buck converter applications

APPLICATIONS

- ◆ High Frequency Point-of-load Synchronous
- ◆ Buck Converter for MB/NB/UMPC/VGA
- ◆ DC/DC Converter
- ◆ Load Switch

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ C$ Unless otherwise noted)

Symbol	Parameter		Typical	Unit
V _{DSS}	Drain-Source Voltage		-30	V
V _{GSS}	Gate-Source Voltage		±20	V
I _D	Continuous Drain Current (T _C =25°C)	V _{GS} =-10V	-5.6	A
	Continuous Drain Current (T _C =70°C)		-5.0	
I _{DM}	Pulsed Drain Current		-20	A
I _S	Continuous Source Current (Diode Conduction)		-1.4	A
P _D	Power Dissipation	T _A =25°C	1.4	W
		T _A =70°C	0.9	
T _J	Operation Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-55~+150	°C
R _{θJA}	Thermal Resistance Junction to Ambient		120	°C/W

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress rating only and functional device operation is not implied

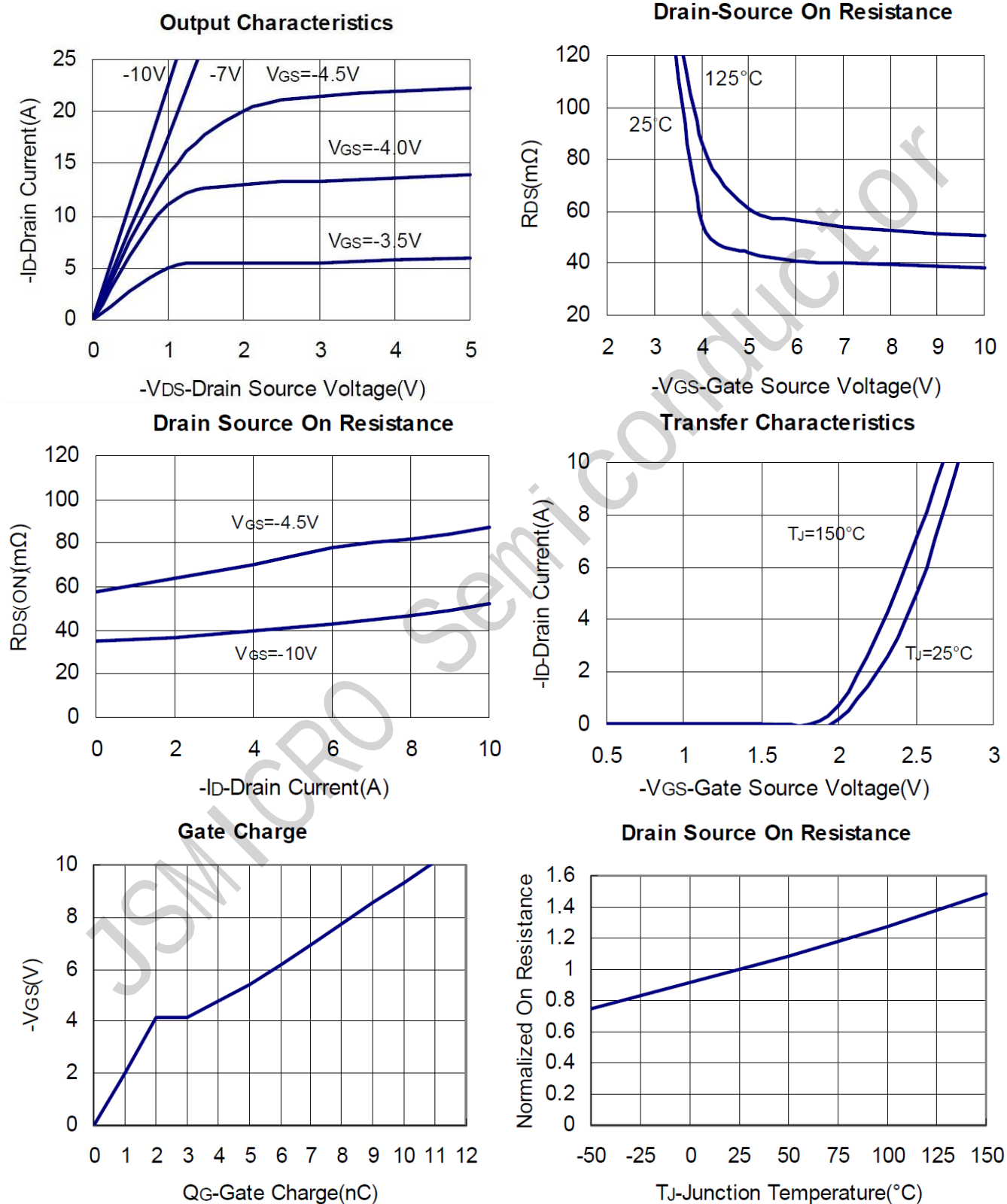
■ **ELECTRICAL CHARACTERISTICS** ($T_A=25^\circ\text{C}$ Unless otherwise noted)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Parameters						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250Ua	-30			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250uA	-1.0		-2.0	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±20V			±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-24V, V _{GS} =0			-1	uA
		V _{DS} =-24V, V _{GS} =0 T _J =55℃			-5	
R _{DS(ON)}	Drain-Source On-Resistance	V _{GS} =-10V, I _D =-5.6A		37	50	mΩ
		V _{GS} =-4.5V, I _D =-4.3A		52	75	
Source-Drain Diode						
V _{SD}	Diode Forward Voltage	I _S =-1.0A, V _{GS} =0V		-0.7	-1.0	V
Dynamic Parameters						
Q _g	Total Gate Charge	V _{DS} =-20V V _{GS} =-4.5V I _D =-4.0A		6		nC
Q _{gs}	Gate-Source Charge			2.7		
Q _{gd}	Gate-Drain Charge			3.1		
C _{iss}	Input Capacitance	V _{DS} =-25V V _{GS} =0V f=1MHz		645		pF
C _{oss}	Output Capacitance			272		
C _{rss}	Reverse Transfer Capacitance			105		
T _{d(on)}	Turn-On Time	V _{DS} =-12V I _D =-4A		9		nS
T _r				16.5		
T _{d(off)}	Turn-Off Time	V _{GEN} =-10V R _G =3.3Ω		22		
T _f				21		

Note: 1. Pulse test: pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$

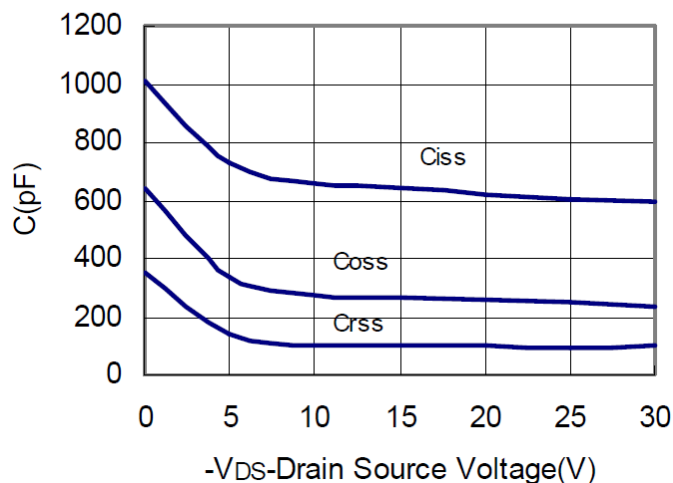
2. Static parameters are based on package level with recommended wire bonding

■ **TYPICAL CHARACTERISTICS** (25°C Unless Note)

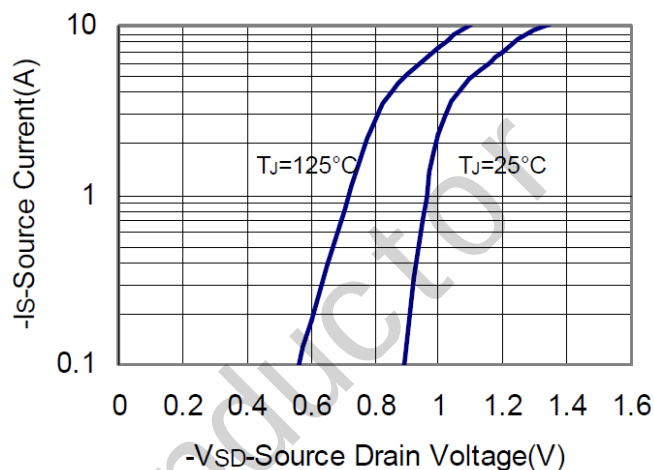


■ TYPICAL CHARACTERISTICS (continuous)

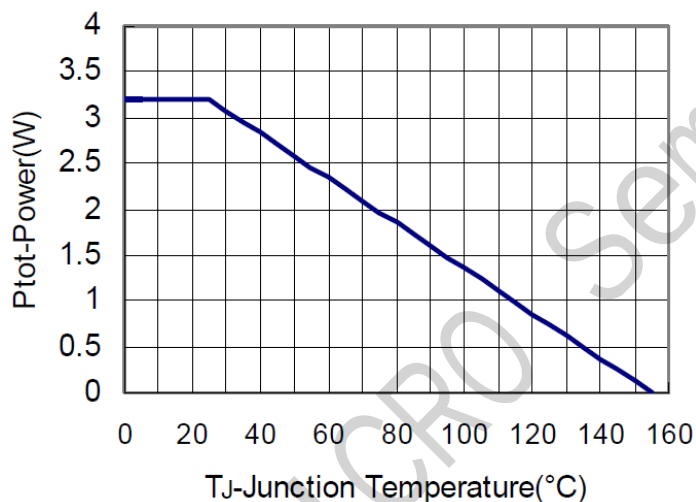
Capacitance



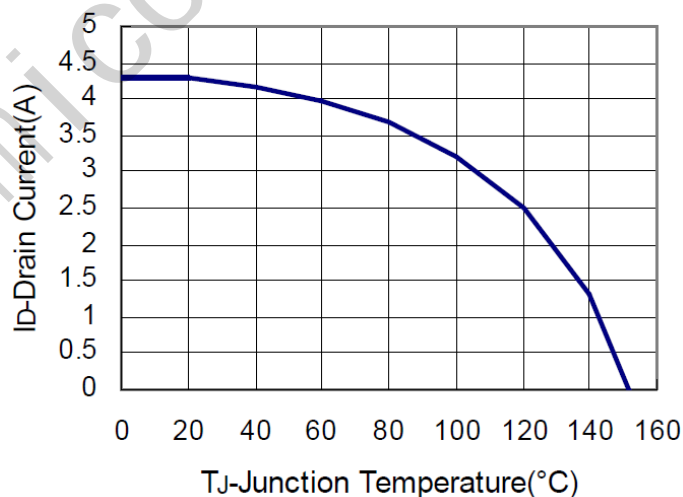
Source Drain Diode Forward



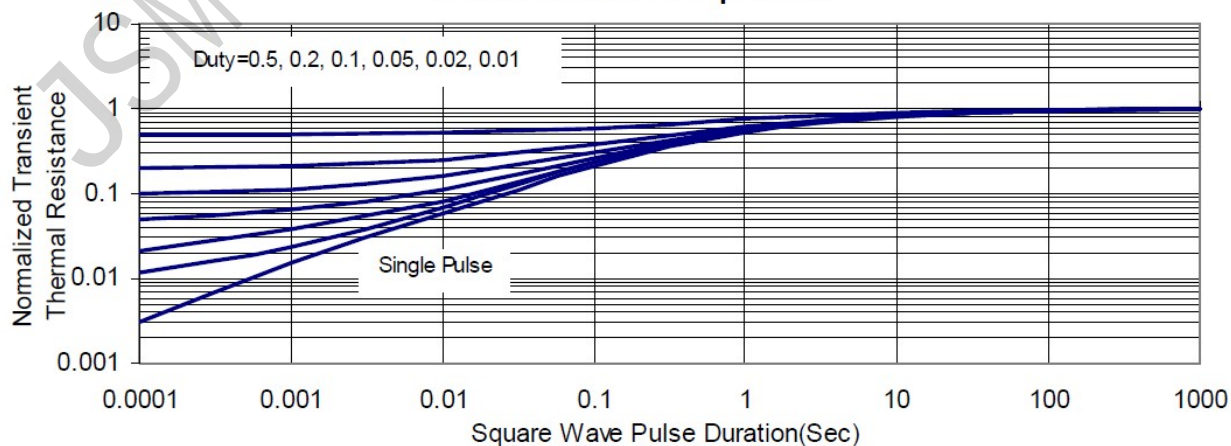
Power Dissipation



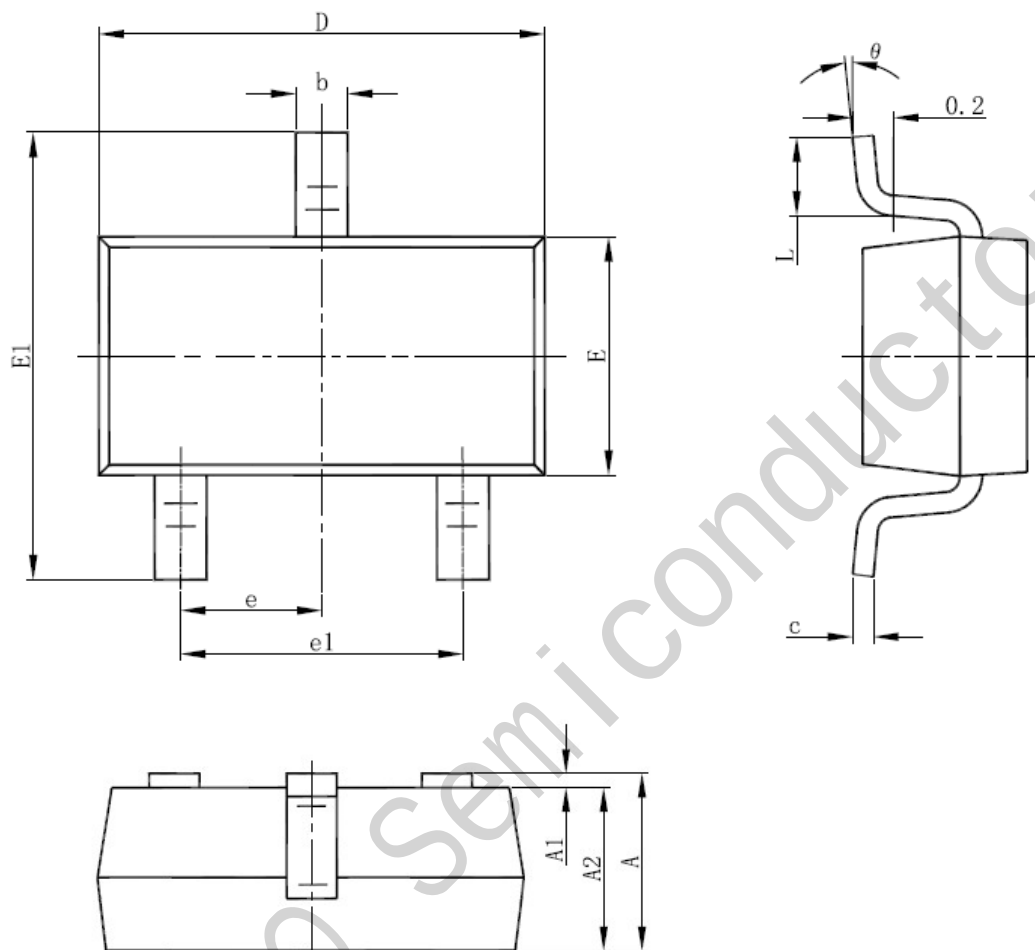
Drain Current



Thermal Transient Impedance



■ SOT23-3L PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°