

30V N-Channel MOSFET

Features

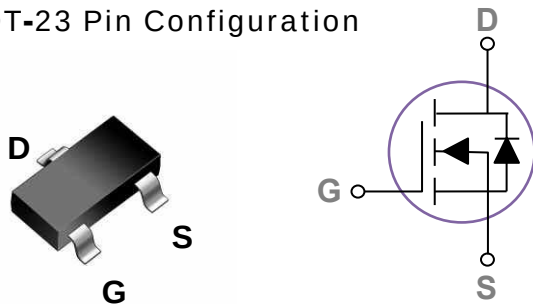
- ◆ Advanced Trench Technology
- ◆ Surface mount package

Applications

- ◆ Power Management
- ◆ Load Switching

VDS	RDS(on) Typ.	ID.
30V	80mΩ @ 10V	2A
	120mΩ @ 4.5V	

SOT-23 Pin Configuration



Absolute Max Ratings at Ta=25°C (Note1)

Parameter	Symbol	Maximum	Units
Drain to Source Voltage	V _{DSS}	30	V
Gate to Source Voltage	V _{GSS}	±20	V
Drain Current (DC)	I _D	2	A
Drain Current (Pulse), PW≤300μs	I _{DP}	12	A
Total Dissipation	P _D	1.1	W
Junction Temperature	T _j	150	°C
Storage Temperature	T _{stg}	-55 to +150	°C

Note 1: Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

Thermal Resistance Ratings (Note 2)

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Ambient	R _{θJA}	113.6	°C/W

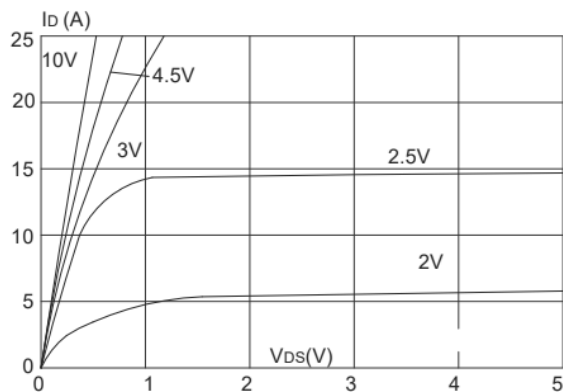
Note 2: When mounted on 1 inch square copper board t ≤ 10sec The value in any given application depends on the user's specific board design.

Electrical Characteristics ($T_J=25\text{ }^{\circ}\text{C}$, unless otherwise noted) (Note 3)

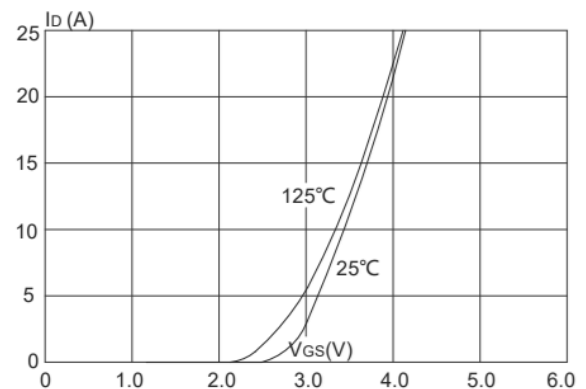
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 250\mu\text{A}$, $V_{GS} = 0\text{V}$	30	33	-	V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 30\text{V}$, $V_{GS} = 0\text{V}$	-	-	1	μA
Gate to Source Leakage Current	I_{GSS}	$V_{GS} = \pm 20\text{V}$, $V_{DS} = 0\text{V}$	-	-	± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$, $I_{DS}=250\mu\text{A}$	0.9	1.7	2.5	V
Static Drain to Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=4.5\text{V}$, $I_D=2\text{A}$	-	80	100	m Ω
		$V_{GS}=2.5\text{V}$, $I_D=1\text{A}$	-	120	180	m Ω
Input Capacitance	C_{iss}	$V_{GS}=0\text{V}$, $V_{DS}=15\text{V}$, Frequency=1.0MHz	-	165	-	pF
Output Capacitance	C_{oss}		-	16	-	pF
Reverse Transfer Capacitance	C_{rss}		-	10	-	pF
Turn-ON Delay Time	$t_{d(on)}$	$V_{DS}=15\text{V}$, $I_D=3\text{A}$, $V_{GS}=4.5\text{V}$, $R_{GEN}=3\Omega$	-	15	-	ns
Rise Time	t_r		-	42	-	ns
Turn-OFF Delay Time	$t_{d(off)}$		-	16	-	ns
Fall Time	t_f		-	10	-	ns
Total Gate Charge	Q_g	$V_{DS}=15\text{V}$, $V_{GS}=4.5\text{V}$, $I_D=3\text{A}$	-	2.5	-	nC
	Q_{gs}		-	0.6	-	nC
	Q_{gd}		-	0.9	-	nC
Diode Forward Voltage	V_{FSD}	$I_S=2\text{A}$, $V_{GS}=0\text{V}$	0.4	0.9	1.2	V

Note 3: Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

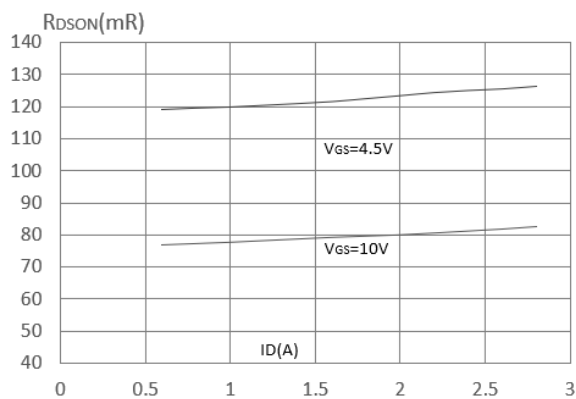
Typical Electrical and Thermal Characteristics



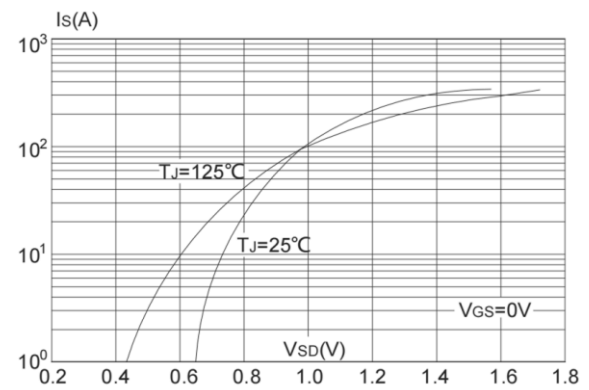
Output Characteristics



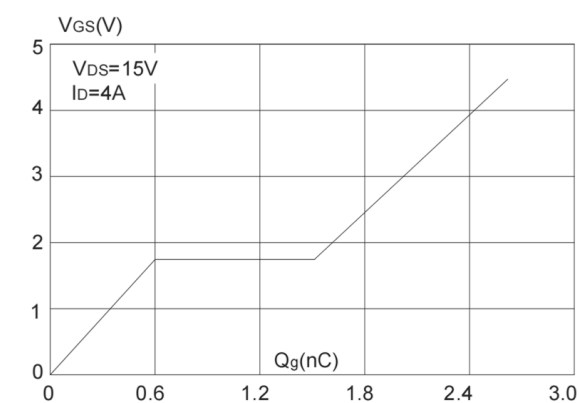
Typical Transfer Characteristics



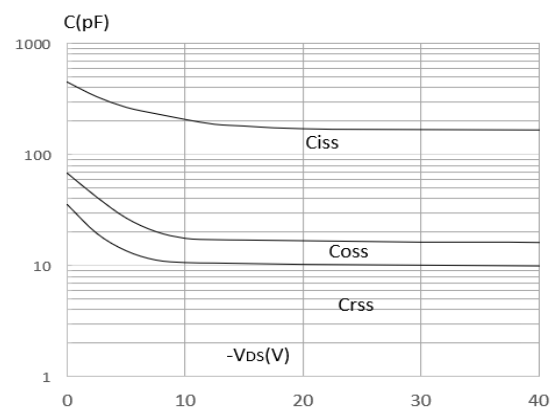
On-resistance vs. Drain Current



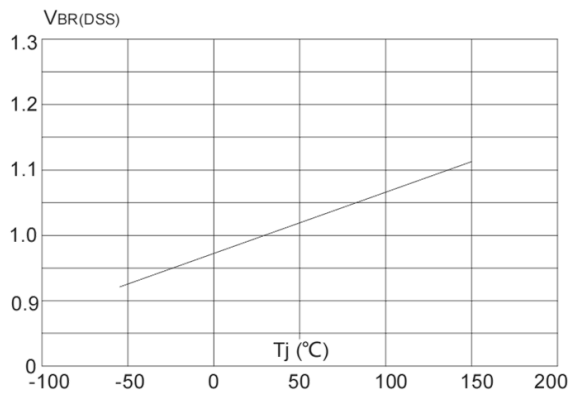
Body Diode Characteristics



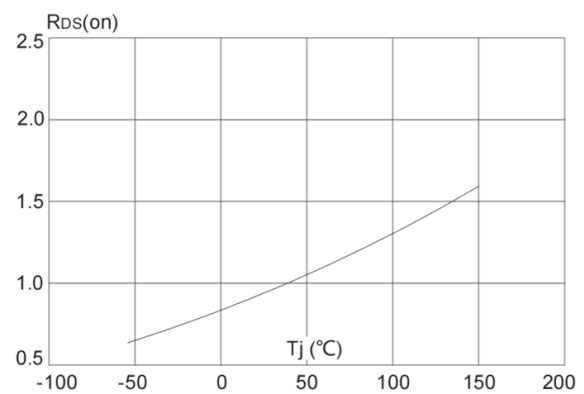
Gate Charge Characteristics



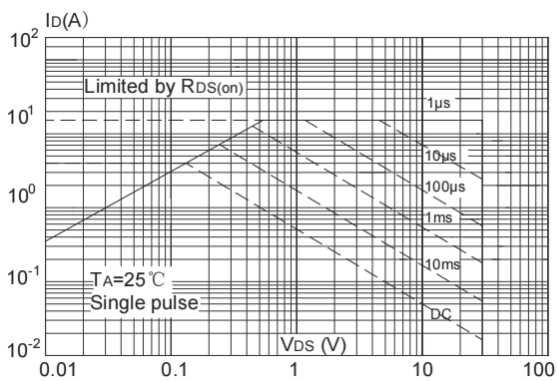
Capacitance Characteristics



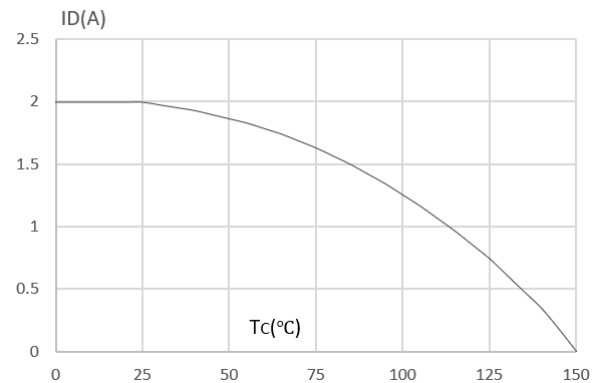
Normalized Breakdown Voltage vs.
Junction Temperature



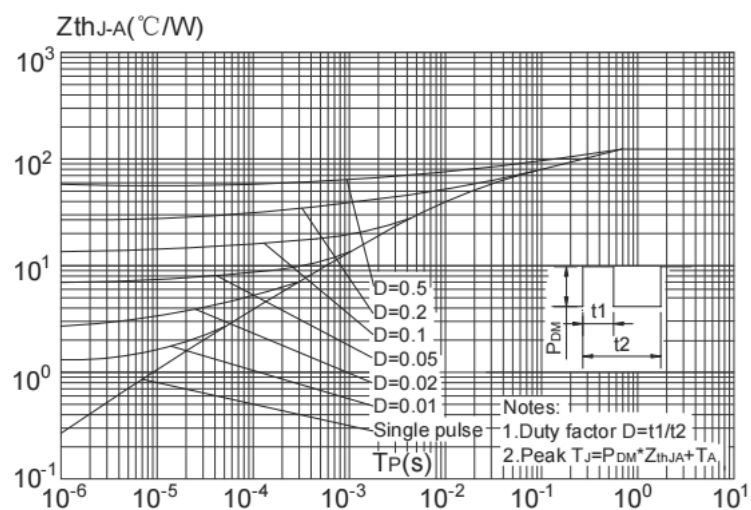
Normalized on Resistance vs.
Junction Temperature



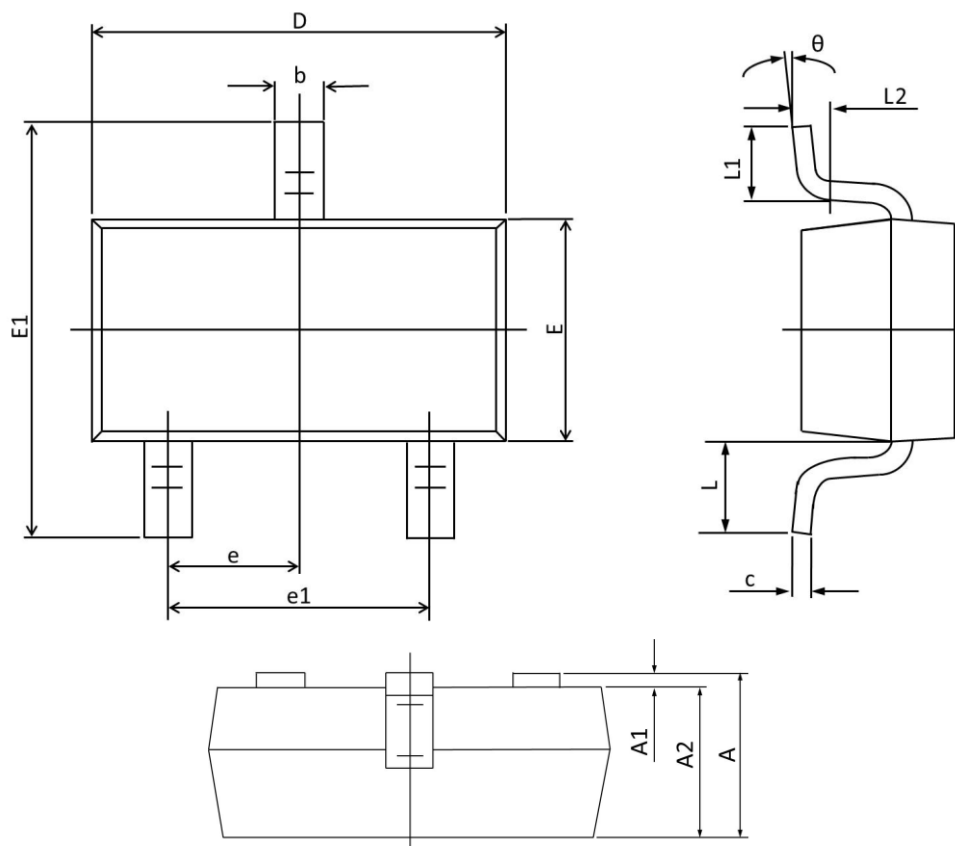
Maximum Safe Operating Area



Maximum Continuous Drain Current vs.
Case Temperature



Maximum Effective Transient
Thermal Impedance, Junction-to-Case

SOT-23 Package Information


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.95 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.55 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
L2	0.25 TYP.		0.01 TYP.	
θ	0°	8°	0°	8°