Single P-Channel, -20V, -4.0A, Power MOSFET

Features

- ✧ Trench Technology
- ✧ Supper high density cell design
- ✧ Excellent ON resistance
- ✧ Extremely Low Threshold Voltage
- ✧ Small package SOT-23

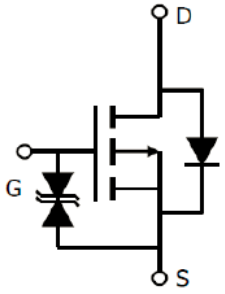
V_{DS} (V)	Typical $R_{DS(on)}$ (mΩ)
-20	34 @ V_{GS}=-4.5V
	42 @ V_{GS}=-2.5V

Applications

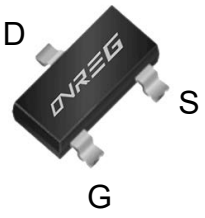
- ✧ PWM applications
- ✧ Load/Power Switching for portable device

Mechanical Data

- ✧ UL Flame Rating : UL94V-0
- ✧ RoHS/WEEE Complain



Circuit Diagram



SOT-23

Absolute Maximum Rating at T_A = 25℃, unless otherwise specified

Parameter		Symbol	Value	Unit
Drain-source voltage		V_{DS}	-20	V
Gate-source voltage		V_{GS}	±8	V
Continuous drain current	T_A=25°C	I_D	-4	A
	T_A=70°C		-3.5	A
Pulsed drain current		I_{DM}	-30	A
Power dissipation	T_A=25°C	P_D	1.5	W
	T_A=70°C		1	W
Thermal resistance from Junction to ambient		$R_{\theta JA}$	100	°C/W
Junction temperature		T_J	150	°C
Storage temperature		T_{STG}	-55~+150	°C

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Electronics Characteristics (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Drain-Source breakdown voltage	$V_{(BR)DSS}$*	-20			V	V_{GS}=0V, I_D=-250μA
Zero gate voltage drain current	I_{DSS}*			-1	μA	V_{DS}=-20V, V_{GS}=0V
Gate-body leakage current	I_{GSS}*			±10	μA	V_{DS}=0V, V_{GS}=±8V
Gate-threshold voltage	$V_{GS(th)}$*	-0.3	-0.57	-0.9	V	V_{DS}=V_{GS}, I_D=-250μA
On state drain current	$I_{D(ON)}$*	-30			A	V_{GS}=-4.5V, V_{DS}=-5V
Drain-source on-resistance	$R_{DS(ON)}$*		34	41	mΩ	V_{GS}=-4.5V, I_D=-4A
			42	53	mΩ	V_{GS}=-2.5V, I_D=-4A
			52	65	mΩ	V_{GS}=-1.8V, I_D=-2A
			61		mΩ	V_{GS}=-1.5V, I_D=-1A
Forward transconductance	g_{FS}		20		S	V_{DS}=-5V, I_D=-4A
Gate resistance	R_g	6	13	20	Ω	V_{DS}=0V, V_{GS}=0V, f=1MHz
Input capacitance	C_{iss}	600	751	905	pF	V_{DS}=-10V, V_{GS}=0V, f=1MHz
Output capacitance	C_{oss}	80	115	150	pF	
Reverse transfer capacitance	C_{rss}	48	80	115	pF	
Turn-on delay time	$t_{d(on)}$		13		nS	V_{GS}=-4.5V,V_{DS}=-10V, R_{GEN}=3Ω,R_L=2.5Ω
Turn-on rise time	t_r		9		nS	
Turn-off delay time	$t_{d(off)}$		19		nS	
Turn-off fall time	t_f		29		nS	
Total gate charge	Q_g	7.4	9.3	11	nC	V_{DS}=-10V,V_{GS}=-4.5V,I_D=-4A
Gate-source charge	Q_{gs}	0.8	1	1.2	nC	
Gate-drain charge	Q_{gd}	1.3	2.2	3.1	nC	
Diode forward voltage	V_{SD}		-0.64	-1	V	I_S=-1A, V_{GS}=0V
Diode forward current	I_S			-2	A	
Body Diode Reverse Recovery Time	t_{rr}	20	26	32	nS	I_F=-4A,dI/dt=500A/μs
Body Diode Reverse Recovery Charge	Q_{rr}	40	51	62	nC	

* Pulse test ; Pulse width ≤300μs, Duty cycle ≤ 0.5% .

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Electronics Characteristics (Ta=25°C, unless otherwise noted)

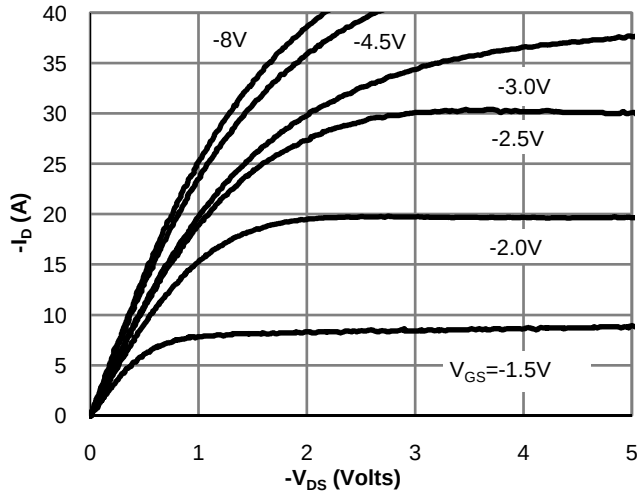

Fig 1: On-Region Characteristics

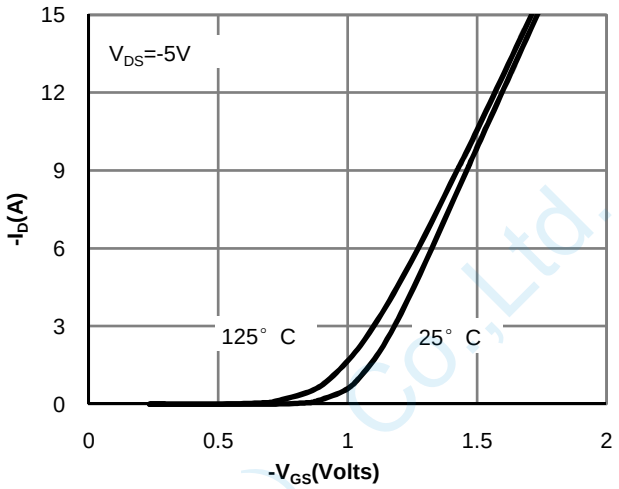

Figure 2: Transfer Characteristics

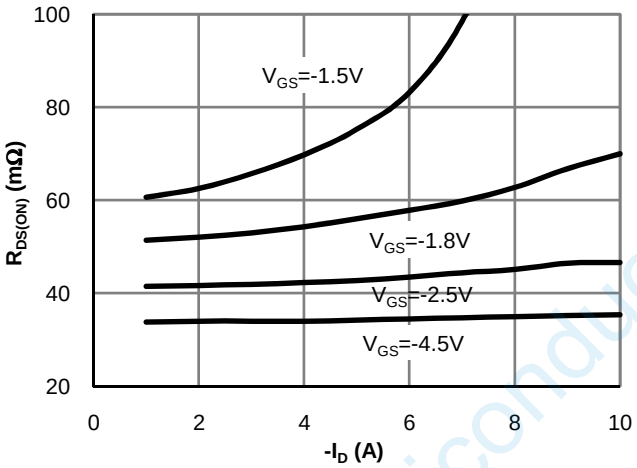

Figure 3: On-Resistance vs. Drain Current and Gate Voltage

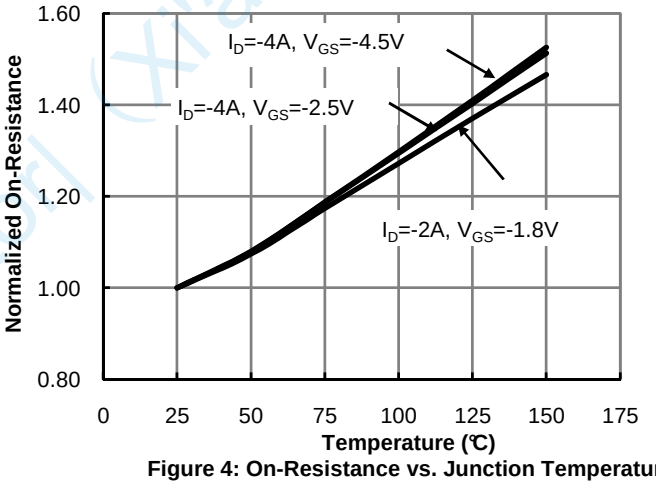

Figure 4: On-Resistance vs. Junction Temperature

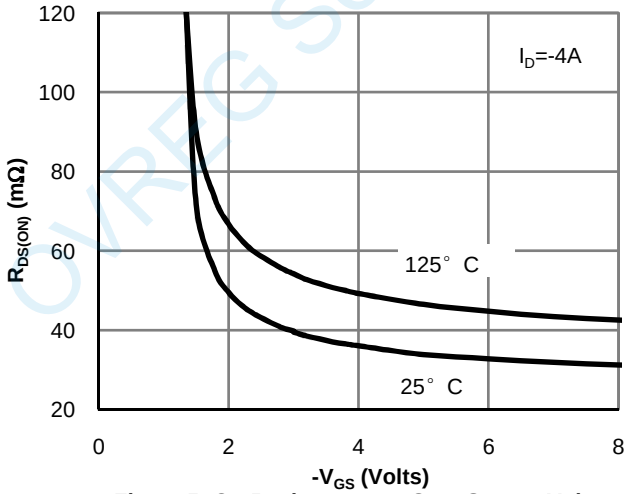

Figure 5: On-Resistance vs. Gate-Source Voltage

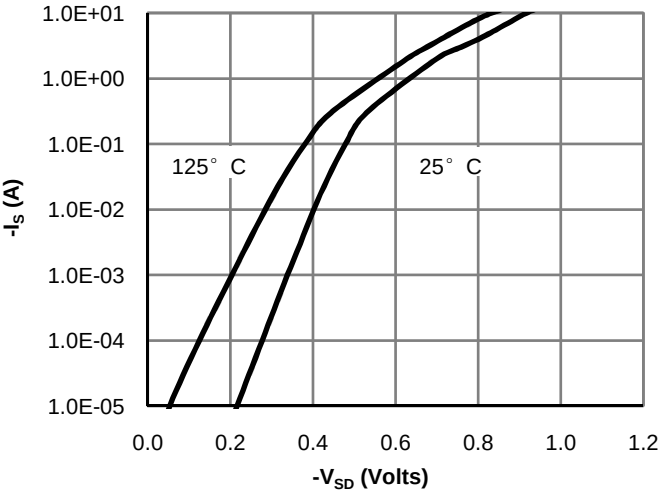

Figure 6: Body-Diode Characteristics

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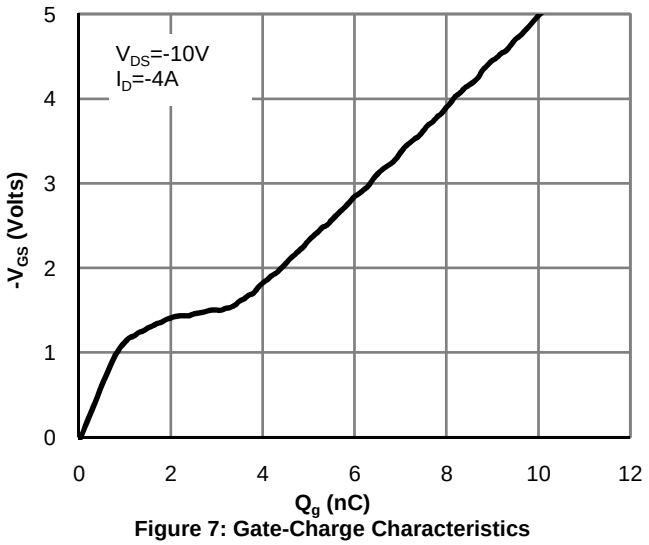
Electronics Characteristics (Ta=25°C, unless otherwise noted)



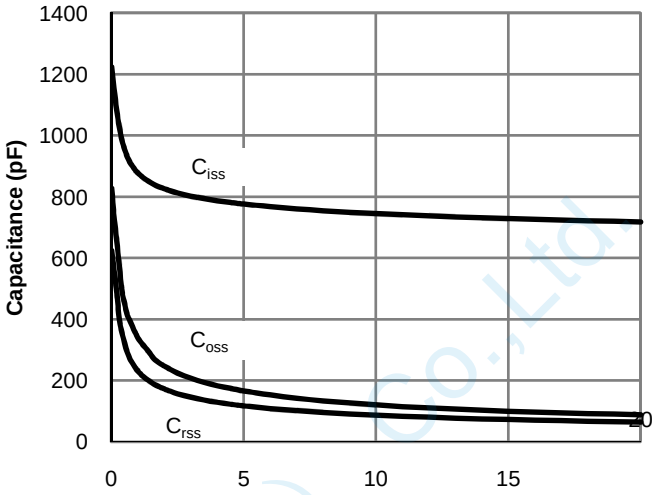


Figure 7: Gate-Charge Characteristics

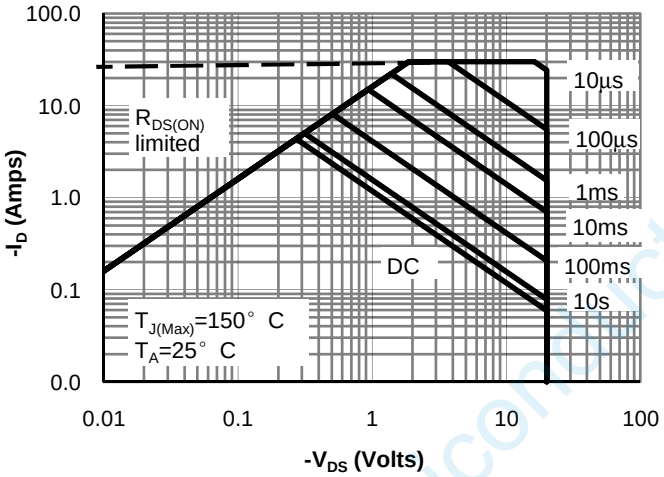


Figure 9: Maximum Forward Biased Safe Operating Area

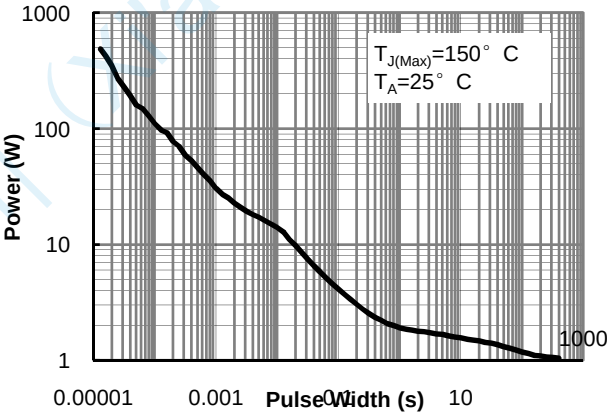


Figure 10: Single Pulse Power Rating Junction-to-

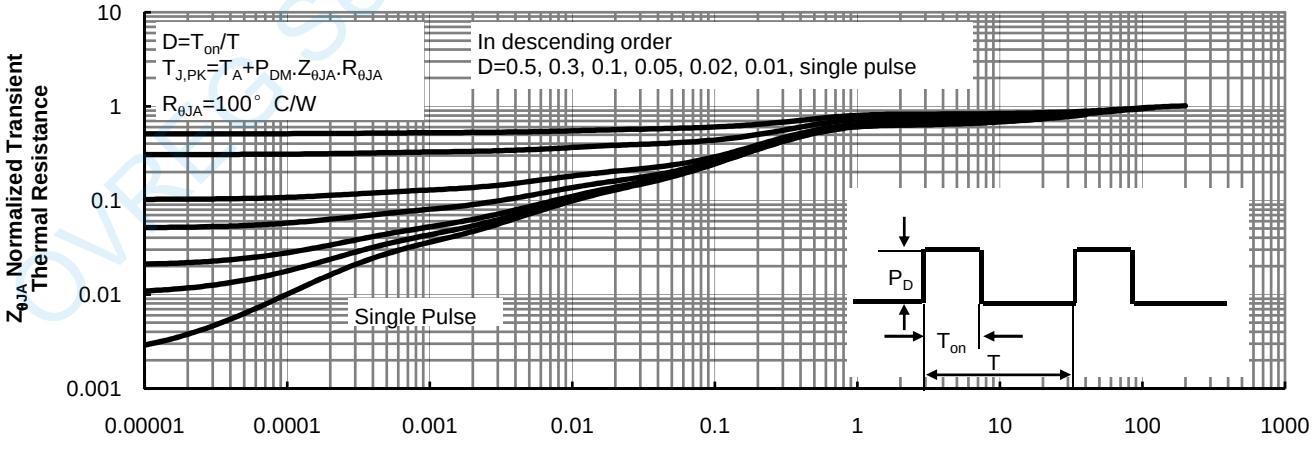


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

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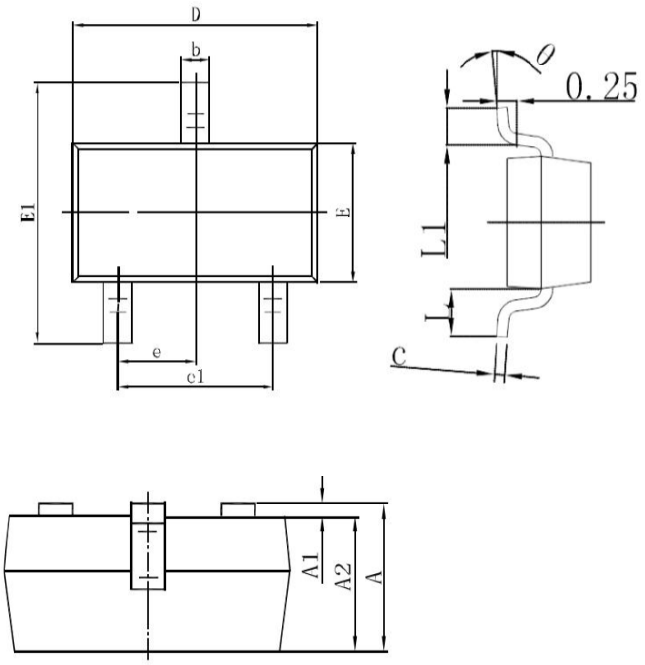
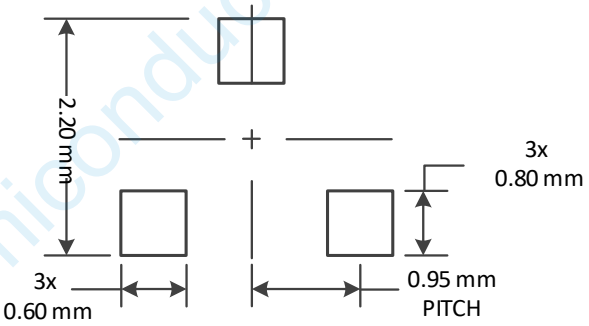
Package information



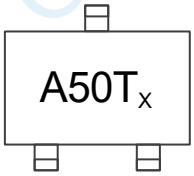
Symbol	Dimensions In Millimeters	
	Min	Max
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	1.150
D	2.900	3.100
E	1.200	1.400
E1	2.250	2.550
e	0.95REF	
e1	1.800	2.000
L	0.55REF	
L1	0.300	0.500

Recommend PCB Layout



Notes: This PCB Layout Is For Reference Purposes Only

Marking



X:Date Code

Ordering Information

Part number	Material	Reel size	MOQ	MOQ/internal box	MOQ/carton
OVM20P41T	GREEN	7 inch	3k/reel	10reel= 30k/box	4boxes=120k/carton

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