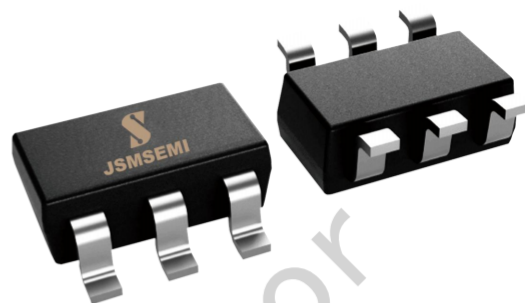


DESCRIPTION

The PMN34UN is the N-Channel logic enhancement mode power field effect transistor is produced using high cell density advanced trench technology..

This high density process is especially tailored to minimize on-state resistance. These devices are particularly suited for low voltage application, and low in-line power loss are needed in a very small outline surface mount package.



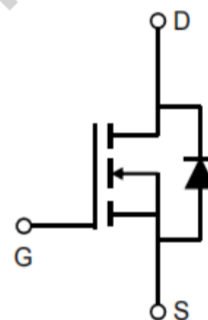
SOT23-6L

FEATURE

- **30V7.5A, $R_{DS(ON)}=20m\Omega$ (max.)@ $V_{GS}=10V$**
- **30V5.6A, $R_{DS(ON)}=35m\Omega$ (max.)@ $V_{GS}=4.5V$**
- Super high design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and Maximum DC current capability
- Full RoHS compliance
- SOT23-6L package design

APPLICATIONS

- Power Management
- Portable Equipment
- DC/DC Converter
- Load Switch
- DSC
- LCD Display inverter



Absolute Maximum Ratings $T_a=25^\circ\text{C}$

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current	$T_A=25^\circ\text{C}$	I_D	7.5	A
	$T_A=70^\circ\text{C}$		6	
Pulsed Drain Current		I_{DM}	38	
Power Dissipation	$T_A=25^\circ\text{C}$	P_D	2	W
	$T_A=70^\circ\text{C}$		1.28	
Thermal Resistance.Junction- to-Ambient	$t \leq 10s$	R_{thJA}	62.5	$^\circ\text{C/W}$
	Steady-State		110	
Thermal Resistance.Junction- to-Lead		R_{thJL}	68	
Junction Temperature		T_J	150	$^\circ\text{C}$
Storage Temperature Range		T_{stg}	-55 to 150	

■Electrical Characteristics $T_a=25^{\circ}\text{C}$

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DS}	$I_D=250\mu\text{A}$, $V_{GS}=0\text{V}$	30			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30\text{V}$, $V_{GS}=0\text{V}$			1	μA
		$V_{DS}=30\text{V}$, $V_{GS}=0\text{V}$, $T_J=55^{\circ}\text{C}$			5	
Gate-Body Leakage Current	I_{GSS}	$V_{DS}=0\text{V}$, $V_{GS}=\pm 20\text{V}$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$, $I_D=250\mu\text{A}$	1.5		2.6	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10\text{V}$, $I_D=7.5\text{A}$			24	m Ω
		$V_{GS}=10\text{V}$, $I_D=7.5\text{A}$, $T_J=125^{\circ}\text{C}$			34	
		$V_{GS}=4.5\text{V}$, $I_D=5.6\text{A}$			35	
On State Drain Current	$I_{D(on)}$	$V_{GS}=10\text{V}$, $V_{DS}=5\text{V}$	38			A
Forward Transconductance	g_{FS}	$V_{DS}=5\text{V}$, $I_D=7.5\text{A}$		20		S
Input Capacitance	C_{iss}	$V_{GS}=0\text{V}$, $V_{DS}=15\text{V}$, $f=1\text{MHz}$		373	448	pF
Output Capacitance	C_{oss}			67		
Reverse Transfer Capacitance	C_{rss}			41		
Gate Resistance	R_g	$V_{GS}=0\text{V}$, $V_{DS}=0\text{V}$, $f=1\text{MHz}$		2	2.8	Ω
Total Gate Charge (10V)	Q_g	$V_{GS}=10\text{V}$, $V_{DS}=15\text{V}$, $I_D=7.5\text{A}$		7.2	11	nC
Total Gate Charge (4.5V)				3.5	5	
Gate Source Charge	Q_{gs}			1.3		
Gate Drain Charge	Q_{gd}			1.7		
Turn-On Delay Time	$t_{d(on)}$			4.5	6.5	ns
Turn-On Rise Time	t_r	$V_{GS}=10\text{V}$, $V_{DS}=15\text{V}$, $R_L=2\Omega$, $R_G=3\Omega$		2.7	4.5	
Turn-Off Delay Time	$t_{d(off)}$			14.9	23	
Turn-Off Fall Time	t_f			2.9	5.5	
Body Diode Reverse Recovery Time	t_{rr}	$I_F=7.5\text{A}$, $dI/dt=100\text{A}/\mu\text{s}$		10.5	12.6	nC
Body Diode Reverse Recovery Charge	Q_{rr}			4.5	5.4	
Maximum Body-Diode Continuous Current	I_S				2.5	A
Diode Forward Voltage	V_{SD}	$I_S=1\text{A}$, $V_{GS}=0\text{V}$			1	V

* The static characteristics in Figures 1 to 6 are obtained using <300 μs pulses, duty cycle 0.5% max.

Typical Characteristics

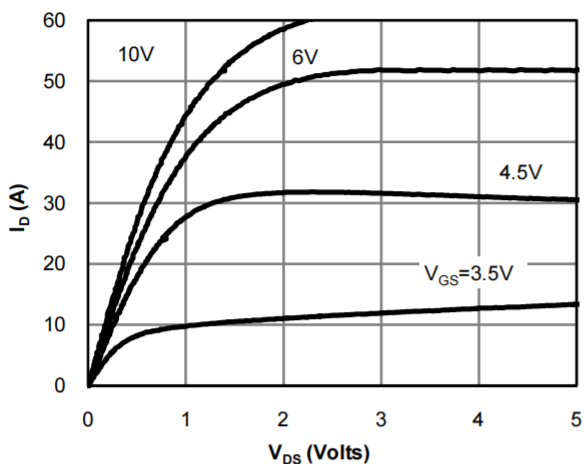


Fig 1: On-Region Characteristics

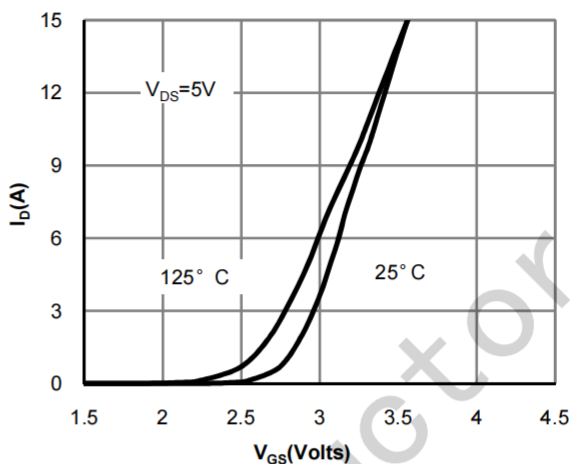


Figure 2: Transfer Characteristics

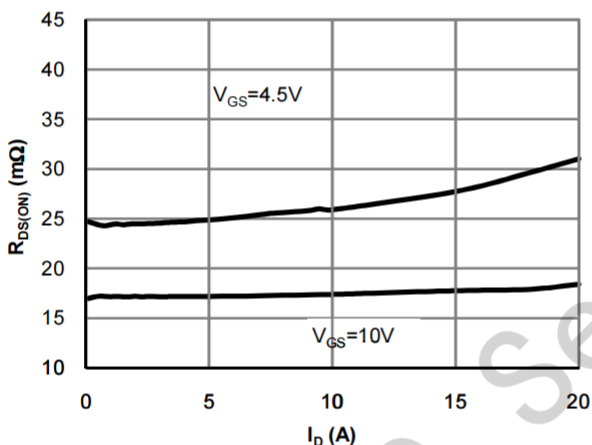


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

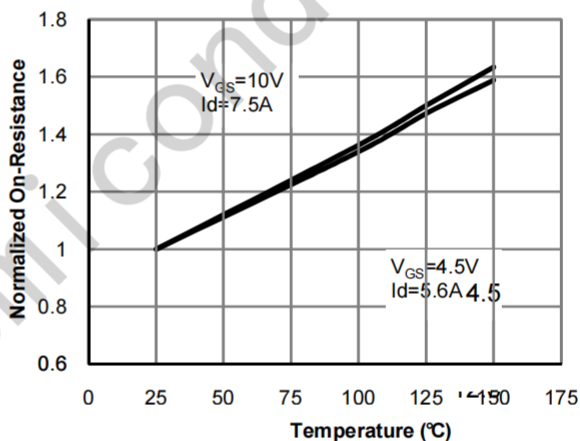


Figure 4: On-Resistance vs. Junction Temperature

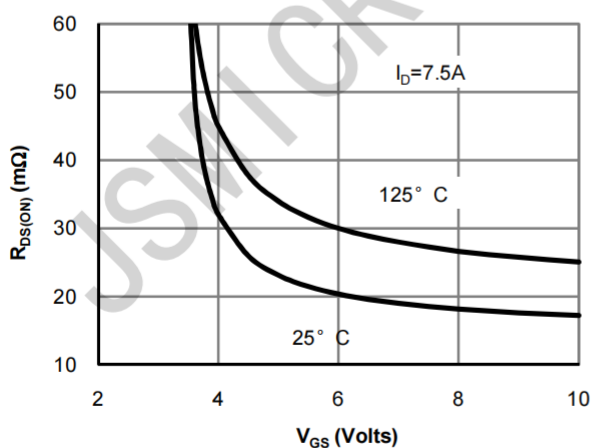


Figure 5: On-Resistance vs. Gate-Source Voltage

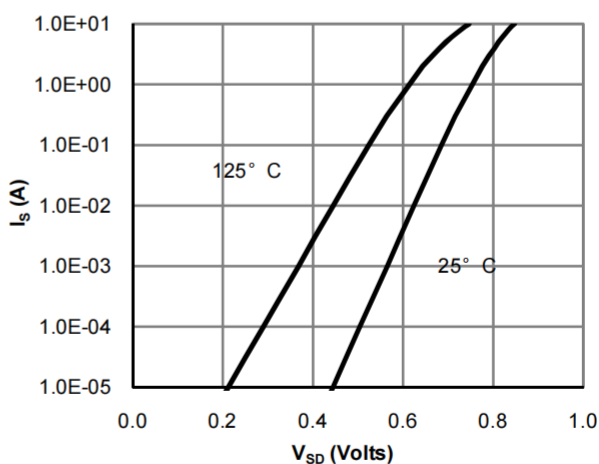
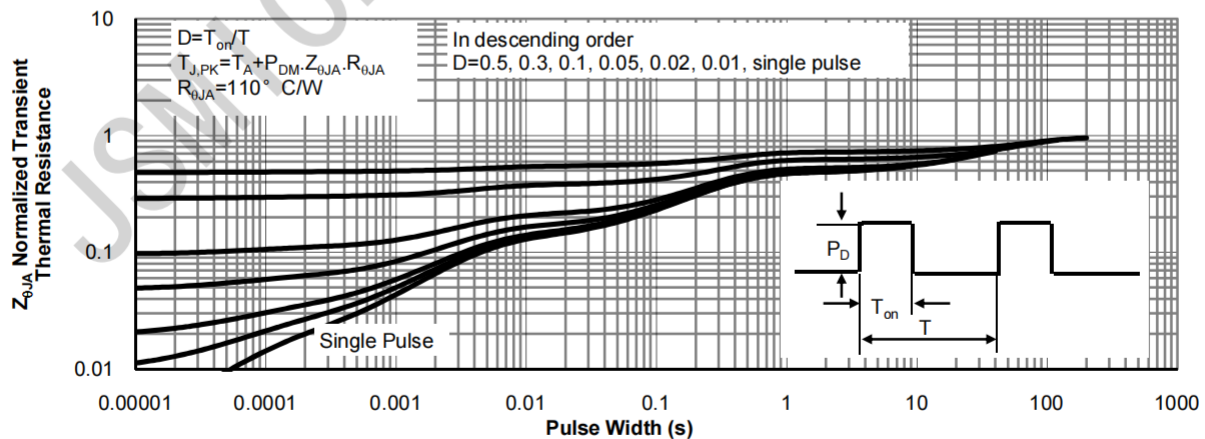
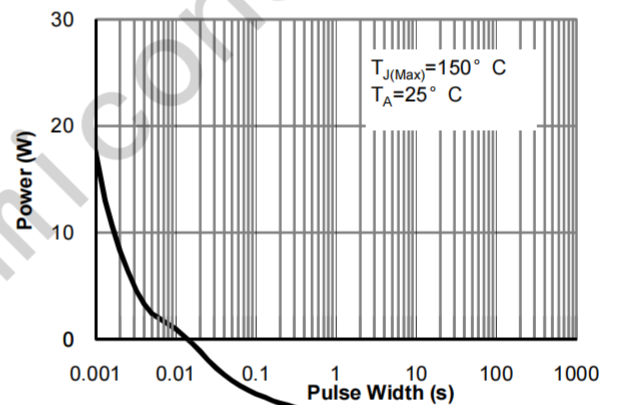
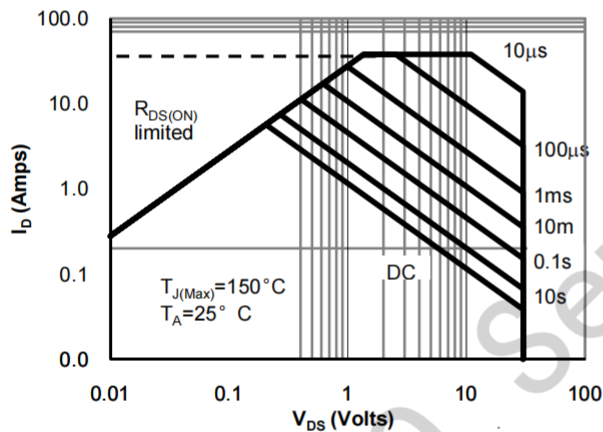
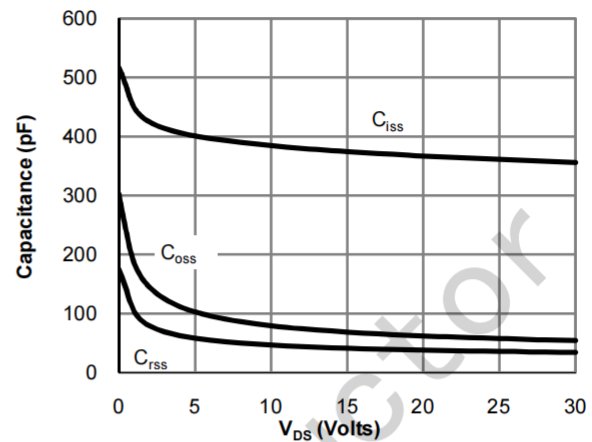
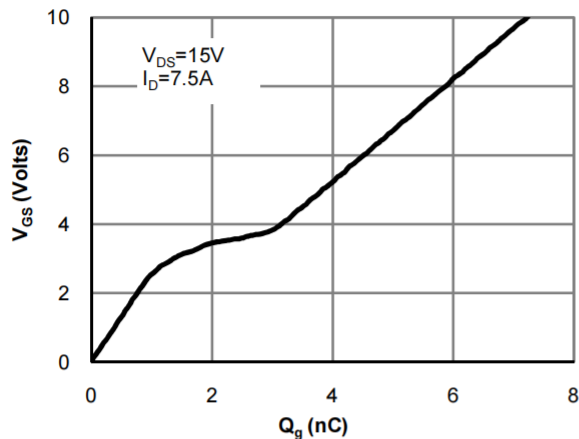
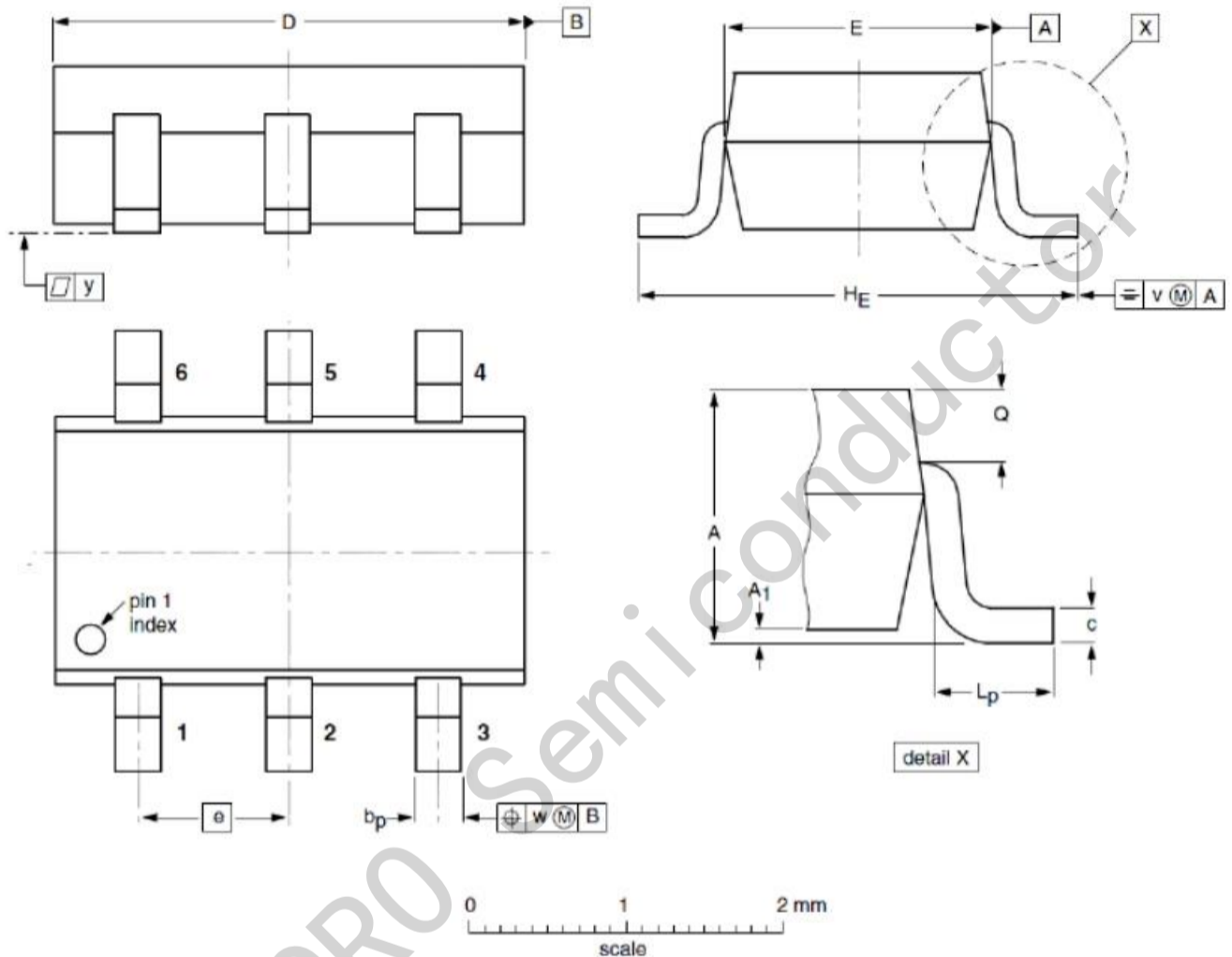


Figure 6: Body-Diode Characteristics

■ Typical Characteristics



SOT23-6L Mechanical Data



DIMENSIONS (unit : mm)

Symbol	Min	Typ	Max	Symbol	Min	Typ	Max
A	0.90	1.10	1.25	A ₁	0.01	0.05	0.10
b _p	0.25	0.35	0.40	c	0.10	0.18	0.26
D	2.70	2.92	3.10	E	1.30	1.60	1.70
e	--	0.95	--	H _E	2.50	2.80	3.00
L _p	0.20	0.38	0.60	Q	0.23	0.29	0.33
v	--	0.20	--	w	--	0.20	--
y	--	0.10	--				