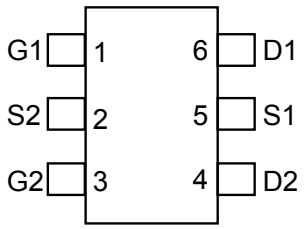
Description

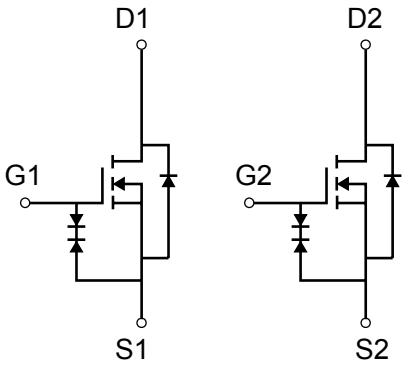
The MOSFET provide the best combination of fast switching, low on-resistance and cost-effectiveness.

MOSFET Product Summary		
V_{DS}(V)	$R_{DS(on)}$(mΩ)	I_D(A)
20	45@ VGS=4.5V	2

Top View(SOT23-6)



Internal Structure



Absolute maximum rating@25℃

Parameter		Symbol	Maximum	Units
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	±8	V
Continuous Drain Curren(Note 1)	T_A=25℃	I_D	4.5	A
	T_A=70℃		3.5	
Pulsed Drain Current(Note 1)		I_{DM}	18	A
Diode Continuous Forward Current(Note 1)		I_S	1	A
Maximum Power Dissipation(Note 1)	T_A=25℃	P_D	1.4	W
	T_A=70℃		0.89	
Maximum Junction Temperature		$T_{J,}$	150	℃
Storage Temperature Range		T_{STG}	-55 to 150	

Thermal Characteristics

Parameter		Symbol	Maximum	Units
Thermal Resistance-Junction to Ambient(Note 1)	t≤10s	$R_{\theta JA}$	90	℃/W
	Steady-State		110	℃/W

Electrical characteristics per line@25℃(unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	I_D =250μA,V_{GS}=0V	20		-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =16V,V_{GS}=0V	-	-	1	μA
Gate Leakage Current	I_{GSS}	V_{DS} =0V,V_{GS}=±8V	-	-	±10	μA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	0.5	0.75	1	V
Drain-Source On-state Resistance(Note 2)	$R_{DS(ON)}$	V_{GS}=4.5V, I_D =4.5A		36	45	mΩ
		V_{GS}=2.5V, I_D =3.5A		45	60	
		V_{GS}=1.8V, I_D =2A		56	85	
Diode Forward Voltage(Note 2)	V_{SD}	V_{GS}=0V,I_S=1A		0.7	1.3	V
Gate Charge Characteristics (Note 3)						
Total Gate Charge	Qg	V_{GS}=4.5V, V_{DS} =10V, I_D =4.5A		3		nC
Gate-Source Charge	Qgs			0.6		
Gate-Drain Charge	Qgd			1		
Dynamic Characteristics (Note 3)						
Gate Resistance	R_G	V_{GS}=0V,V_{DS}=0V,F=1MHz		3.3		Ω
Input Capacitance	C_{ISS}	V_{GS}=0V, V_{DS} =10V, f=1MHz		240		pF
Output Capacitance	C_{OSS}			46		pF
Reverse Transfer Capacitance	C_{RSS}			27		pF
Turn-On Delay Time	$t_{d(on)}$	V_{DD} =10V, R_G =6Ω,I_{DS}=1A V_{GS}=10V,R_L=10Ω		2.5	4.5	ns
Turn-Off Delay Time	$t_{d(off)}$			13.5	24.5	ns
Turn-On Rise Time	t_r			13	23.5	ns
Turn-On Fall Time	t_f			2.5	4.5	ns
Reverse Recovery Time	t_{rr}	I_{SD}=4.5A, dI_{SD}/dt=100A/us		7.2		ns
Reverse Recovery Charge	Qrr	I_{SD}=4.5A, dI_{SD}/dt=100A/us		2.2		nC

Note:

1. Surface Mounted on 1in^2 pad area, t≤ 10sec.
2. Pulse test ; pulse width≤300μs, duty cycle≤2%.
3. Guaranteed by design, not subject to production testing.

Typical Characteristics

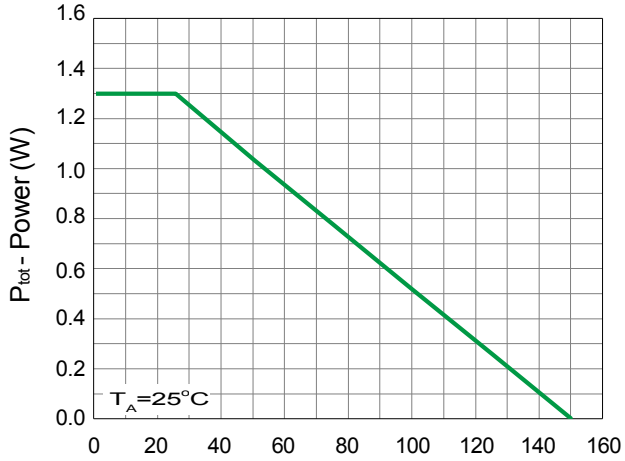


Fig 1. T_j - Junction Temperature (°C)

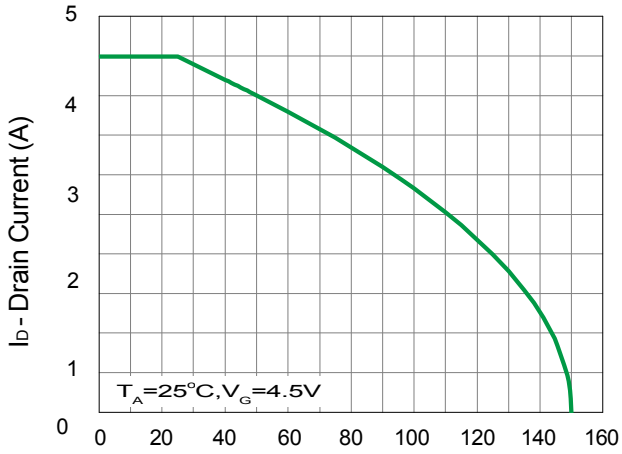


Fig 2. T_j - Junction Temperature (°C)

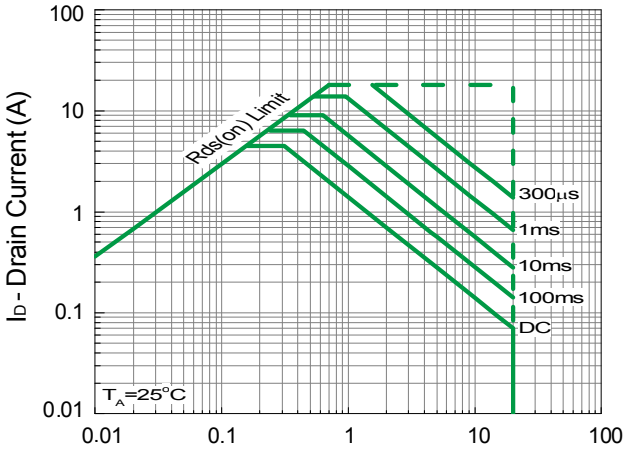


Fig 3. V_{DS} - Drain - Source Voltage (V)

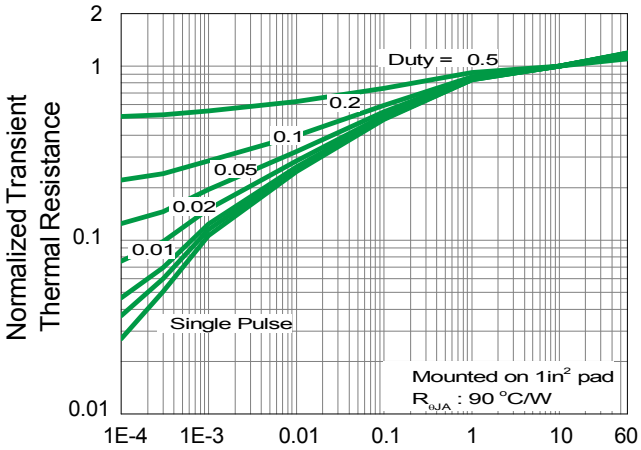


Fig 4. Square Wave Pulse Duration (sec)

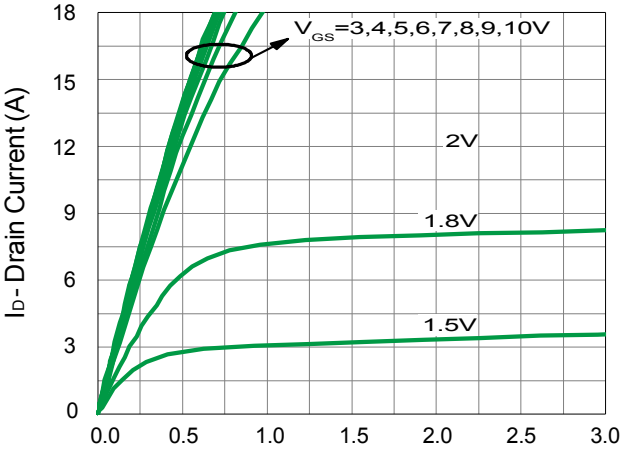


Fig 5. V_{DS} - Drain-Source Voltage (V)

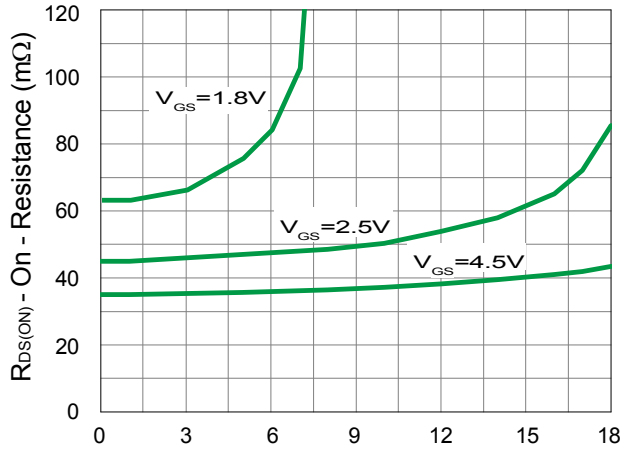


Fig 6. I_D - Drain Current (A)

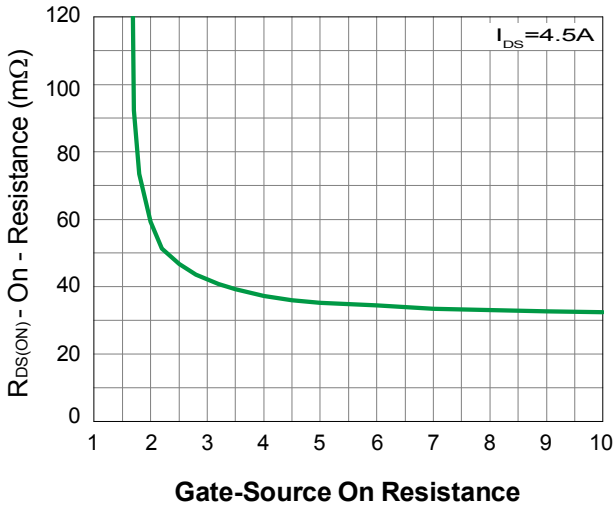


Fig 7. V_{GS} - Gate - Source Voltage (V)

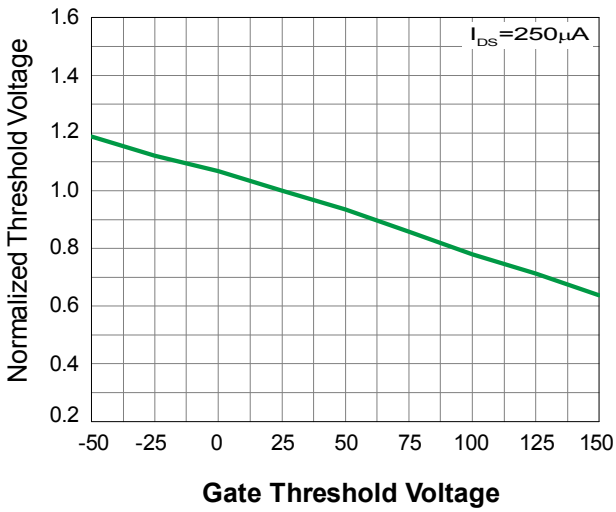
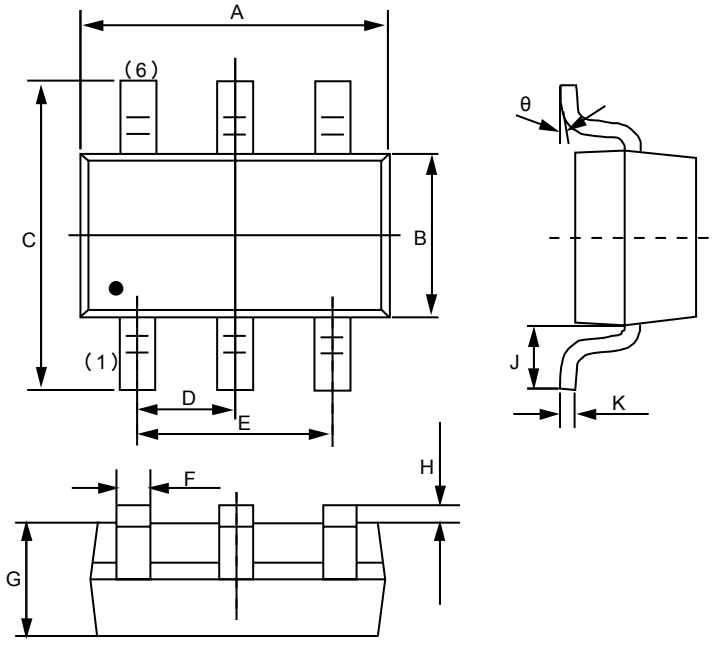
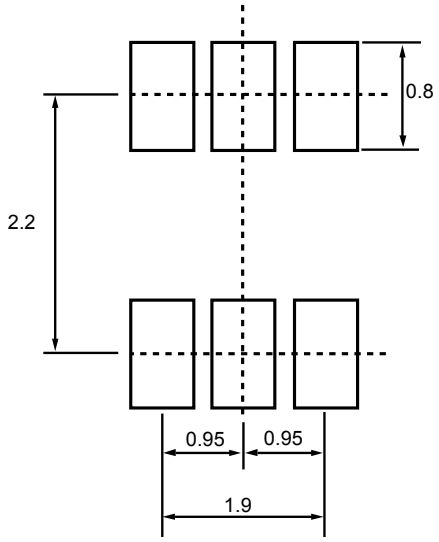


Fig 8.T_j - Junction Temperature (°C)

Product dimension (SOT-23-6L)



Dim	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	2.820	3.020	0.111	0.119
B	1.500	1.700	0.059	0.067
C	2.650	2.950	0.104	0.116
D	0.950（BSC）		0.037（BSC）	
E	1.800	2.000	0.071	0.079
F	0.300	0.500	0.012	0.020
G	1.050	1.150	0.041	0.045
H	0.000	0.100	0.000	0.004
J	0.45	0.60	0.0180	0.0236
K	0.100	0.200	0.004	0.008
θ	0°	8°	0°	8°



Unit:mm

Ordering information

Device	Package	Shipping
PDNM6T20V2E	SOT-23-6L (Pb-Free)	3000 / Tape & Reel

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