

**100V/2.6A N-Channel Advanced Power MOSFET****Description**

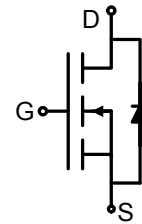
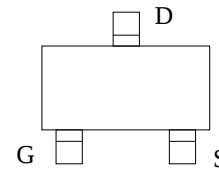
The PTL03N10 uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications.

General Features

- $V_{DS} = 100V, I_D = 2.6A$
 $R_{DS(ON)} < 165m\Omega @ V_{GS}=10V$
- High density cell design for ultra low R_{dson}

Application

- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

**Schematic diagram****SOT-23****Order Information**

Product	Package	Marking	Packing
PTL03N10	SOT-23	3N10	3000PCS/Reel

Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous $T_c = 25^\circ\text{C}$	I_D	2.6	A
Drain Current-Pulsed ^(Note 1) $T_c = 25^\circ\text{C}$	I_{DM}	10	A
Maximum Power Dissipation $T_c = 25^\circ\text{C}$	P_D	1	W
Maximum Operating Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 To 150	$^\circ\text{C}$

Thermal Characteristic

Thermal Resistance, Junction-to-Ambient ^(Note 2)	$R_{\theta JA}$	125	$^\circ\text{C/W}$
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Electrical Characteristics ($T_J=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	100		-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=100V, V_{GS}=0V$	-	-	1	μA

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Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V,V _{DS} =0V	-	-	±100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} ,I _D =250μA	1.0	1.8	3.0	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =2.5A	-		165	mΩ
		V _{GS} =4.5V, I _D =1.5A	-		180	
Dynamic Characteristics (Note4)						
Input Capacitance	C _{ISS}	V _{DS} =30V,V _{GS} =0V, F=1.0MHz	-	405	-	PF
Output Capacitance	C _{OSS}		-	36	-	PF
Reverse Transfer Capacitance	C _{RSS}		-	18	-	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	t _{d(on)}	V _{DD} =30V,I _D =1A, V _{GS} =10V,R _G =6.8Ω	-	9	-	nS
Turn-on Rise Time	t _r		-	8.1	-	nS
Turn-Off Delay Time	t _{d(off)}		-	20	-	nS
Turn-Off Fall Time	t _f		-	13.5	-	nS
Total Gate Charge	Q _g	V _{DS} =30V,I _D =1A, V _{GS} =10V	-	9		nC
Gate-Source Charge	Q _{gs}		-	1.5	-	nC
Gate-Drain Charge	Q _{gd}		-	2.1	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V _{SD}	V _{GS} =0V,I _S =2.5A	-	-	1.3	V

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production

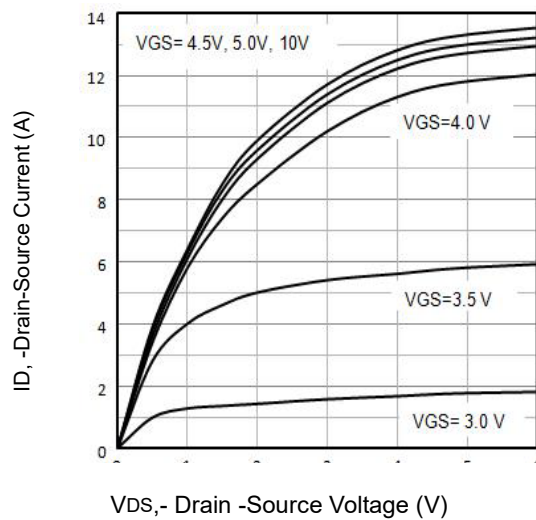
**100V/2.6A N-Channel Advanced Power MOSFET****Typical Characteristics**

Fig1. Typical Output Characteristics

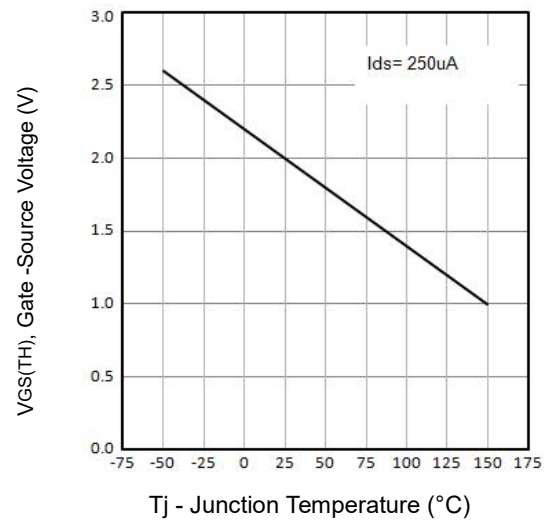


Fig2. Threshold Voltage Vs. Temperature

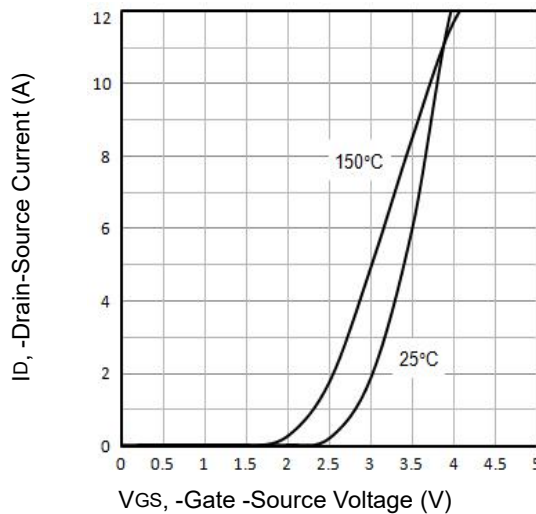


Fig3. Typical Transfer Characteristics

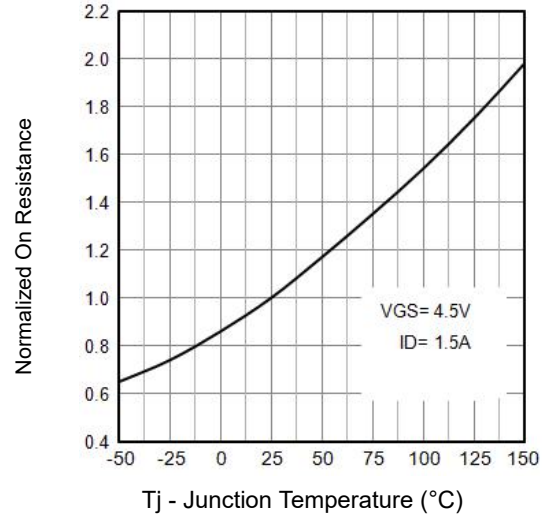


Fig4. Normalized On-Resistance Vs. Temperature

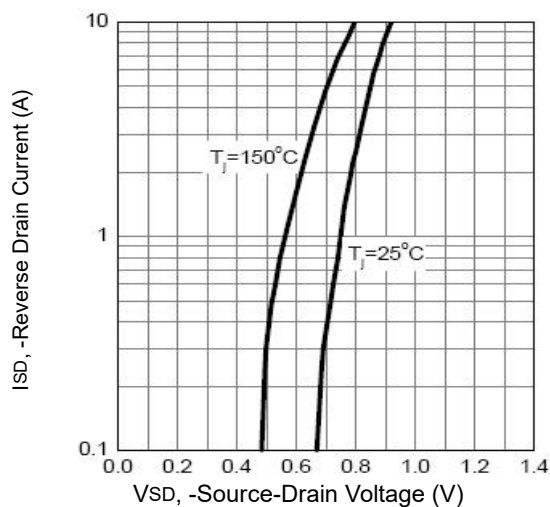


Fig5. Typical Source-Drain Diode Forward Voltage

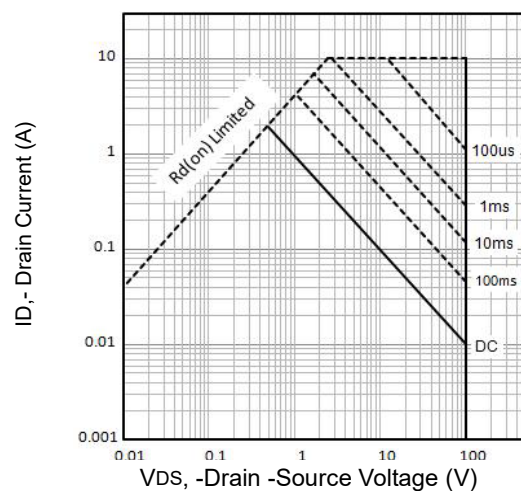


Fig6. Maximum Safe Operating Area



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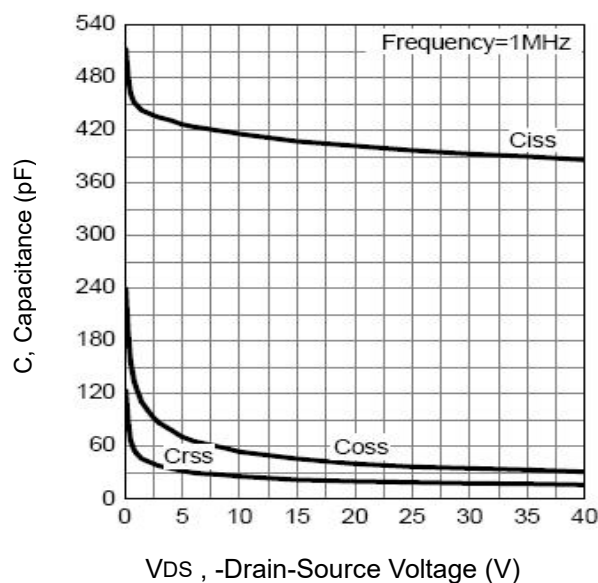


Fig7. Typical Capacitance Vs. Drain-Source Voltage

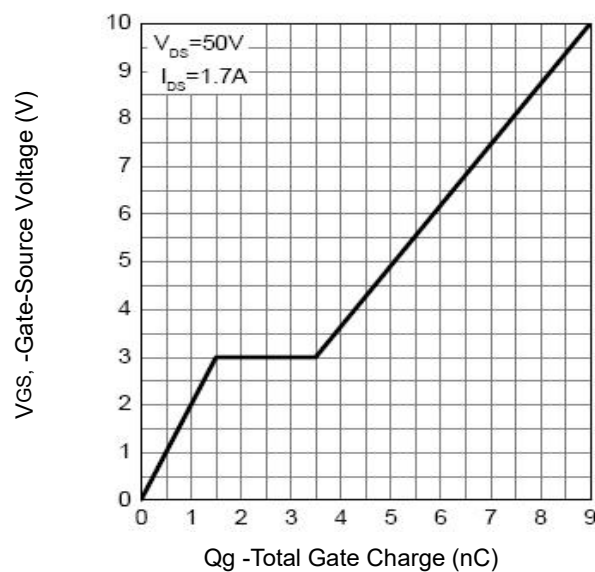


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

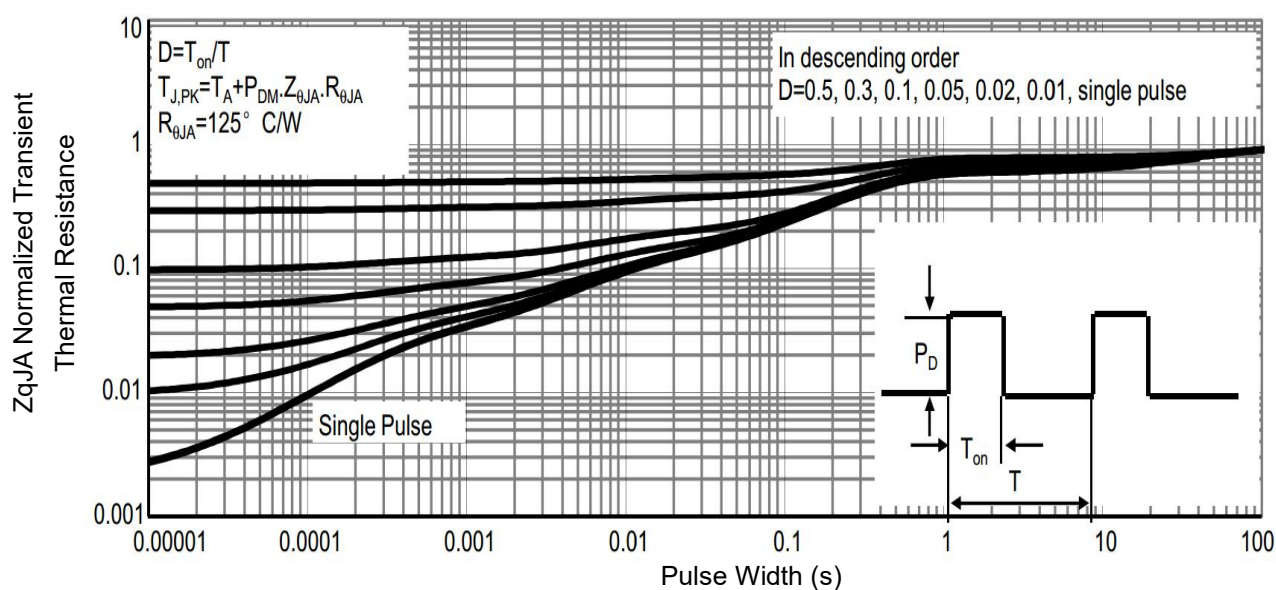


Figure 9: Normalized Maximum Transient Thermal

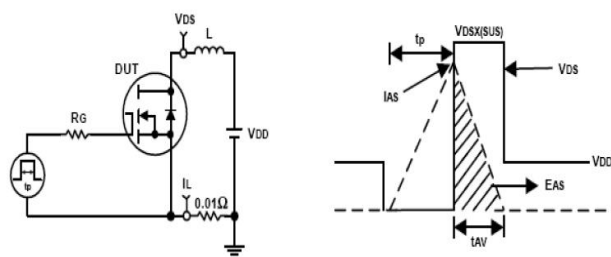


Fig10. Unclamped Inductive Test Circuit and Waveforms

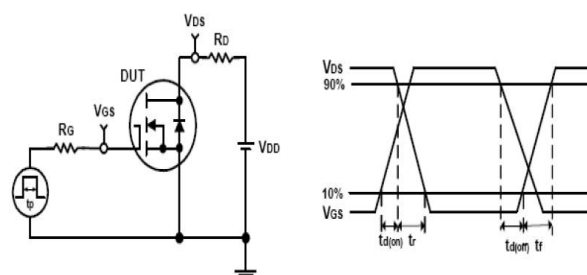
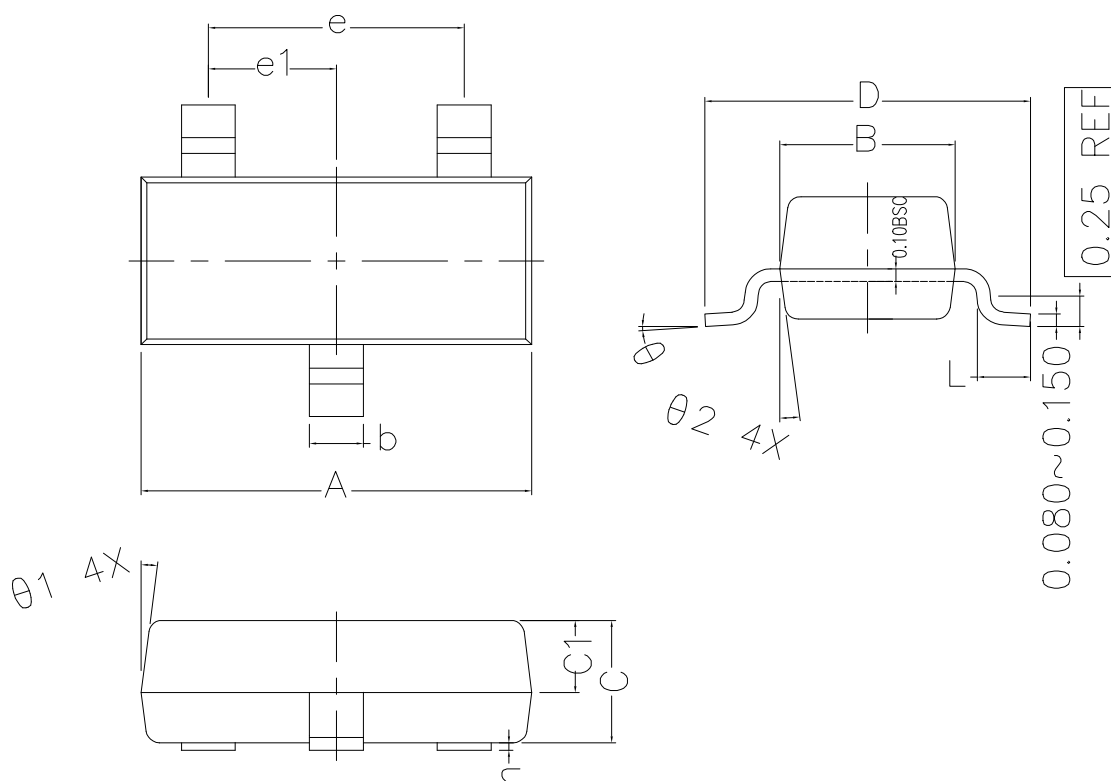


Fig11. Switching Time Test Circuit and waveforms

**SOT-23 Package Outline Dimensions (Units: mm)**

COMMON DIMENSIONS (UNITS OF MEASURE IS mm)			
	MIN	NORMAL	MAX
A	2.800	2.900	3.000
B	1.200	1.300	1.400
C	0.900	1.000	1.100
C1	0.500	0.550	0.600
D	2.250	2.400	2.550
L	0.300	0.400	0.500
h	0.010	0.050	0.100
b	0.300	0.400	0.500
e	1.90 TYPE		
e1	0.95 TYPE		
θ_1	7° TYPE		
θ_2	7° TYPE		
θ	0° ~ 7°		