



Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-30V	6.8mΩ@-10V	-40A
	8.5mΩ@-4.5V	

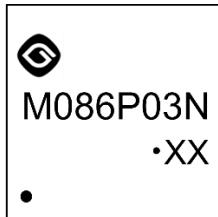
Feature

- Trench Technology Power MOSFET
- Low $R_{DS(ON)}$
- Low Gate Charge
- Low Gate Resistance
- 100% UIS Tested

Application

- Power Switching Application

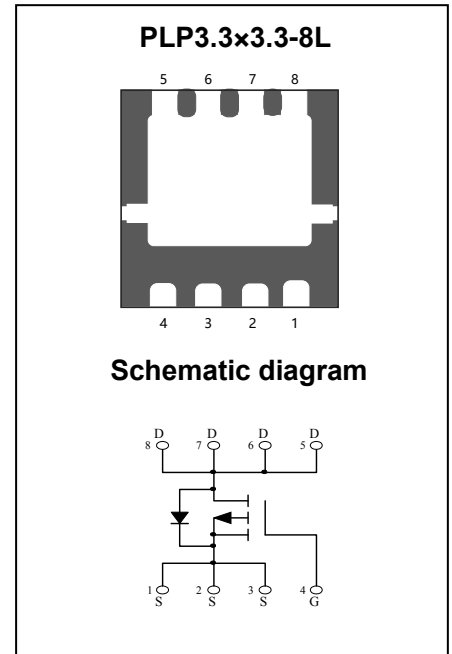
MARKING:



M086P03N = Device Code

XX = Date Code

•XX Solid Dot = Green Indicator



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain - Source Voltage	V_{DS}	-30	V
Gate - Source Voltage	V_{GS}	±25	V
Continuous Drain Current ¹	I_D	-40	A
Continuous Drain Current ¹	I_D	-28	A
Pulsed Drain Current ²	I_{DM}	-128	A
Single Pulsed Avalanche Current ³	I_{AS}	-28	A
Single Pulsed Avalanche Energy ³	E_{AS}	196	mJ
Power Dissipation ⁵	P_D	96	W
Thermal Resistance from Junction to Ambient ⁶	$R_{\theta JA}$	75	$^\circ\text{C}/\text{W}$
Thermal Resistance from Junction to Case	$R_{\theta JC}$	1.3	$^\circ\text{C}/\text{W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55~ +150	$^\circ\text{C}$

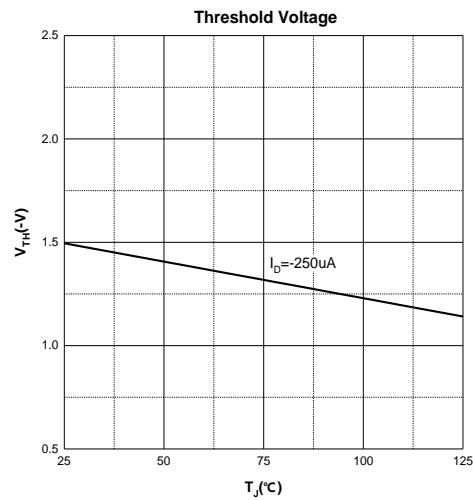
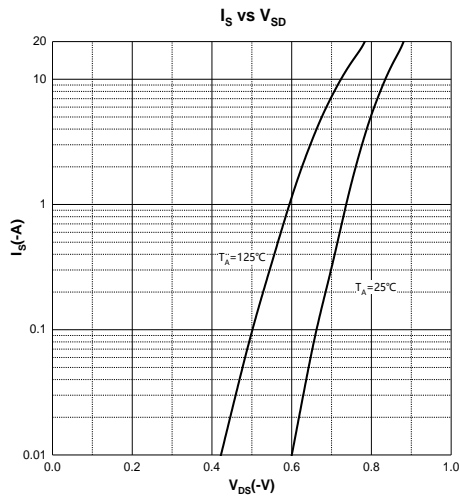
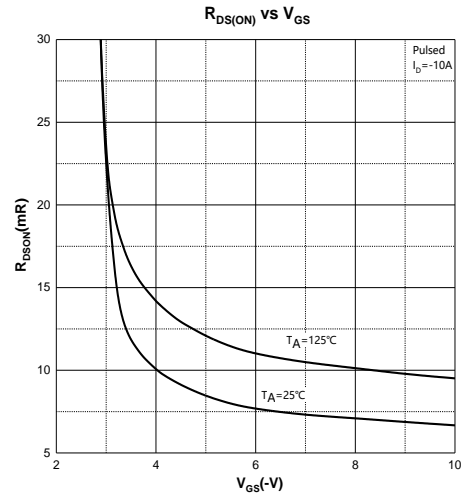
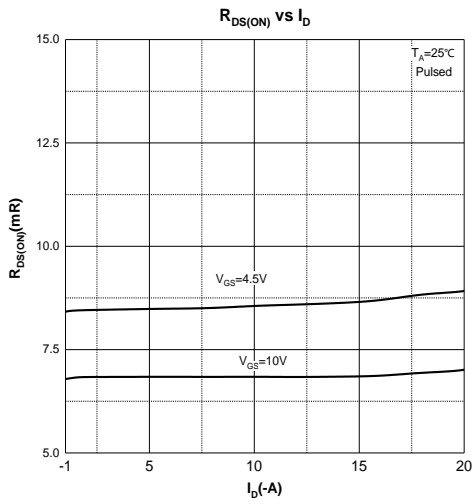
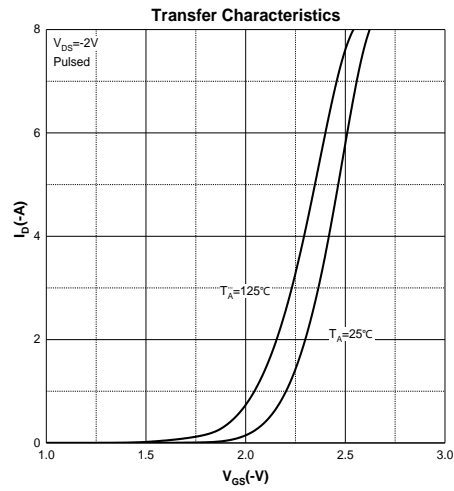
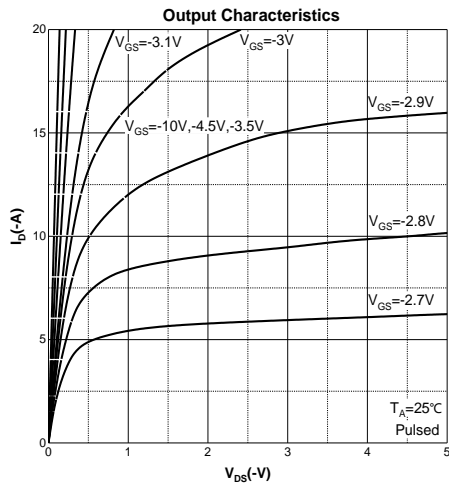
MOSFET ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise noted)

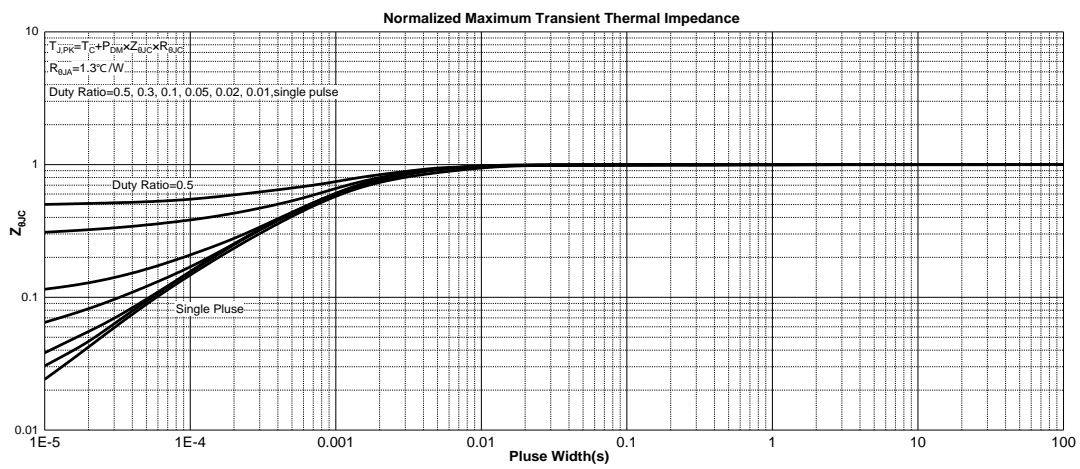
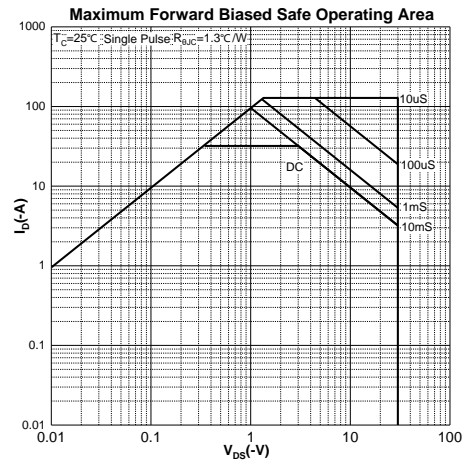
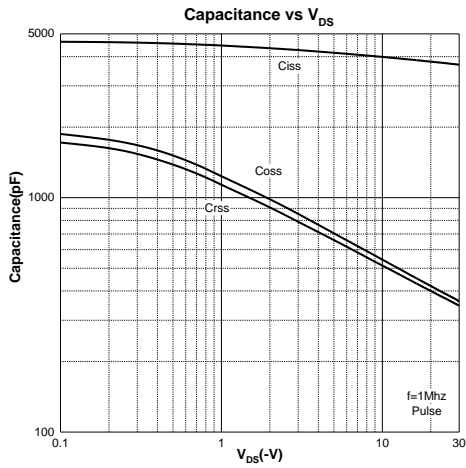
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain - Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	-30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -24V, V _{GS} = 0V			-1	μA
Gate - Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	nA
On Characteristics⁴						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-1.0	-1.5	-3.0	V
Drain-source On-resistance	R _{DS(on)}	V _{GS} = -10V, I _D = -5.0A		6.8	8.6	mΩ
		V _{GS} = -4.5V, I _D = -5.0A		8.5	13	
Forward Transconductance	g _{FS}	V _{DS} = -10V, I _D = -5.0A	10			S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = -15V, V _{GS} = 0V, f = 1MHz		3840		pF
Output Capacitance	C _{oss}			464		
Reverse Transfer Capacitance	C _{rss}			441		
Gate Resistance	R _g	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz		5		Ω
Switching Characteristics						
Total Gate Charge	Q _g	V _{DS} = -15V, V _{GS} = -10V, I _D = -10A		60		nC
Gate-source Charge	Q _{gs}			15		
Gate-drain Charge	Q _{gd}			18		
Turn-on Delay Time	t _{d(on)}	V _{DD} = -15V, V _{GS} = -10V, R _L = 3Ω, R _G = 3Ω		25		ns
Turn-on Rise Time	t _r			11		
Turn-off Delay Time	t _{d(off)}			136		
Turn-off Fall Time	t _f			49		
Source - Drain Diode Characteristics						
Diode Forward Voltage ⁴	V _{SD}	V _{GS} = 0V, I _S = -5.0A			-1.2	V

Notes :

- 1.The maximum current rating is limited by package.And device mounted on a large heatsink
- 2.Pulse Test : Pulse Width ≤ 10μs, duty cycle ≤ 1%.
- 3.E_{AS} condition: V_{DD} = -15V, V_{GS} = -10V, L = 0.5mH, R_G = 25Ω Starting T_J = 25°C.
- 4.Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.
- 5.The power dissipation P_D is limited by T_{J(MAX)} = 150°C.And device mounted on a large heatsink
- 6.Device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C.

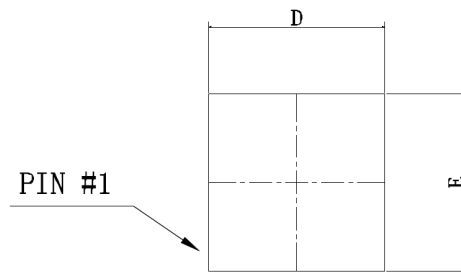
Typical Characteristics



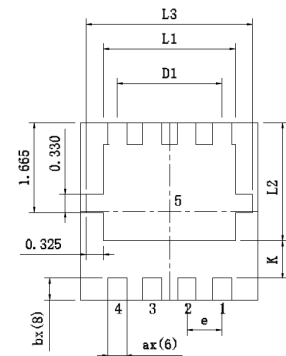


PLP3.3x3.3-8L Package Information

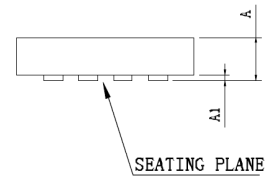
symbol	Dimension in mm		
	MIN	NOM	MAX
A	0.650	0.700	0.750
A1	0.050	0.100	0.150
D	3.200	3.300	3.400
E	3.200	3.300	3.400
D1	---	1.950	---
e	---	0.650	---
ax(6)	0.300	0.350	0.400
bx(8)	0.350	0.400	0.450
L1	2.400	2.450	2.500
L2	2.150	2.200	2.250
L3	3.050	3.100	3.150
K	0.600	0.700	0.800



Top View



Bottom View



Side View