

XP10TN135K

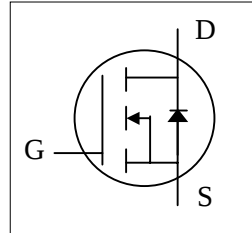
Halogen-Free Product



N-CHANNEL ENHANCEMENT MODE

POWER MOSFET

- ▼ Simple Drive Requirement
- ▼ Lower Gate Charge
- ▼ Fast Switching Characteristic
- ▼ Halogen Free & RoHS Compliant Product

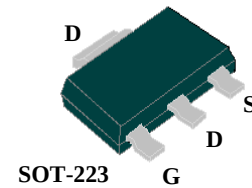


BV_{DSS}	100V
$R_{DS(ON)}$	135m Ω
I_D	3A

Description

XP10TN135 series are innovative design and silicon process technology to achieve the lowest possible on-resistance and fast switching performance. It provides the designer with an extreme efficient device for use in a wide range of power applications.

The SOT-223 package is designed for surface mount application, larger heatsink than SO-8 and SOT package.



Absolute Maximum Ratings@T_j=25°C(unless otherwise specified)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_A=25^\circ\text{C}$	Drain Current ³ , V_{GS} @ 10V	3	A
$I_D@T_A=70^\circ\text{C}$	Drain Current ³ , V_{GS} @ 10V	2.4	A
I_{DM}	Pulsed Drain Current ¹	12	A
$P_D@T_A=25^\circ\text{C}$	Total Power Dissipation	2.78	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$

Thermal Data

Symbol	Parameter	Value	Units
Rthj-a	Maximum Thermal Resistance, Junction-ambient ³	45	$^\circ\text{C}/\text{W}$

Electrical Characteristics@T_j=25°C(unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	100	-	-	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =3A	-	115	135	mΩ
		V _{GS} =4.5V, I _D =2A	-	122	145	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	1	1.7	3	V
g _{fs}	Forward Transconductance	V _{DS} =5V, I _D =3A	-	11	-	S
I _{DSS}	Drain-Source Leakage Current	V _{DS} =80V, V _{GS} =0V	-	-	25	uA
I _{GSS}	Gate-Source Leakage	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Q _g	Total Gate Charge	I _D =3A	-	12	20	nC
Q _{gs}	Gate-Source Charge	V _{DS} =80V	-	2.2	-	nC
Q _{gd}	Gate-Drain ("Miller") Charge	V _{GS} =10V	-	2.5	-	nC
t _{d(on)}	Turn-on Delay Time	V _{DS} =50V	-	7	-	ns
t _r	Rise Time	I _D =1A	-	5	-	ns
t _{d(off)}	Turn-off Delay Time	R _G =3.3Ω	-	16	-	ns
t _f	Fall Time	V _{GS} =10V	-	6	-	ns
C _{iss}	Input Capacitance	V _{GS} =0V	-	610	980	pF
C _{oss}	Output Capacitance	V _{DS} =25V	-	40	-	pF
C _{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	25	-	pF
R _g	Gate Resistance	f=1.0MHz	-	2.2	4.4	Ω

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V _{SD}	Forward On Voltage ²	I _S =2A, V _{GS} =0V	-	-	1.3	V
t _{rr}	Reverse Recovery Time	I _S =3A, V _{GS} =0V,	-	22	-	ns
Q _{rr}	Reverse Recovery Charge	di/dt=100A/μs	-	23	-	nC

Notes:

- 1.Pulse width limited by Max. junction temperature.
- 2.Pulse test
- 3.Surface mounted on 1 in² copper pad of FR4 board, t ≤10sec ; 120 °C/W when mounted on Min. copper pad.

THIS PRODUCT IS SENSITIVE TO ELECTROSTATIC DISCHARGE, PLEASE HANDLE WITH CAUTION.

USE OF THIS PRODUCT AS A CRITICAL COMPONENT IN LIFE SUPPORT OR OTHER SIMILAR SYSTEMS IS NOT AUTHORIZED.

XSEMI DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT

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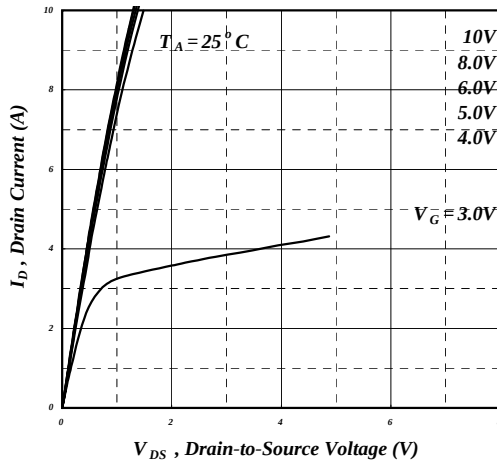


Fig 1. Typical Output Characteristics

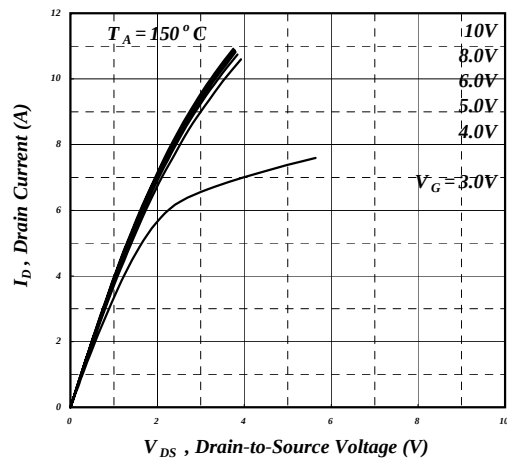


Fig 2. Typical Output Characteristics

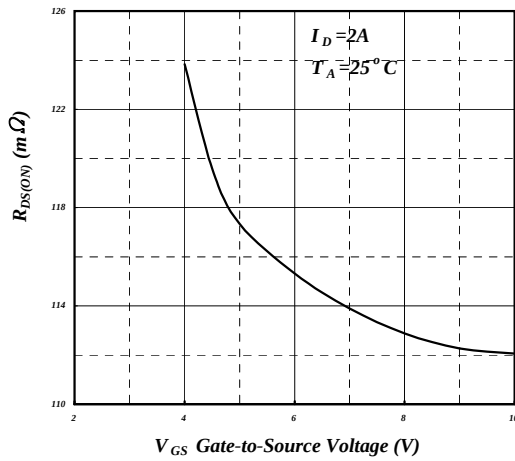


Fig 3. On-Resistance v.s. Gate Voltage

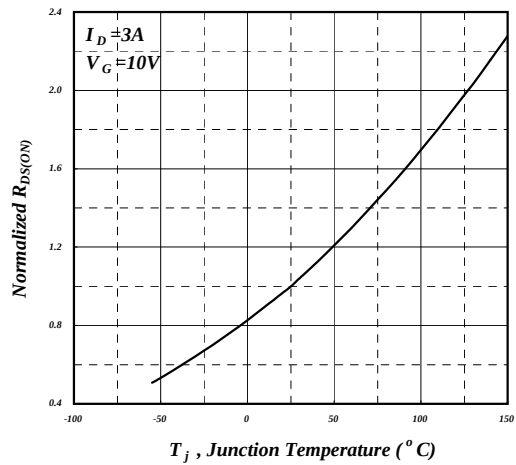


Fig 4. Normalized On-Resistance v.s. Junction Temperature

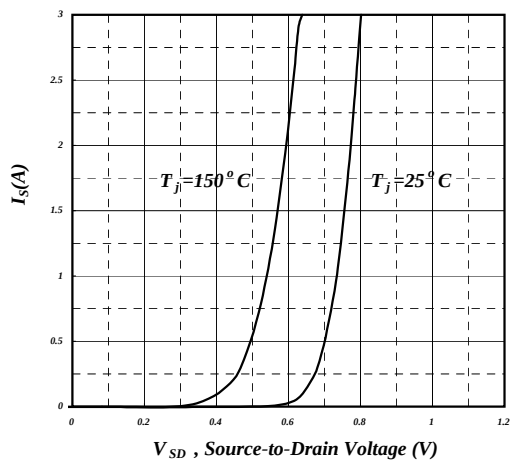


Fig 5. Forward Characteristic of Reverse Diode

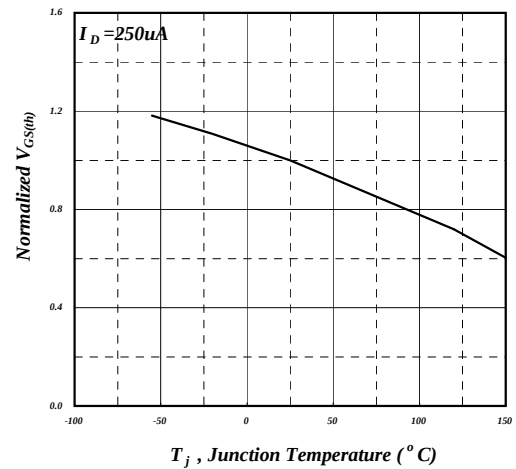
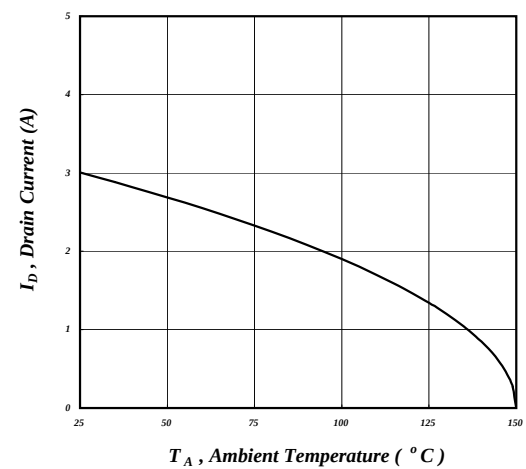
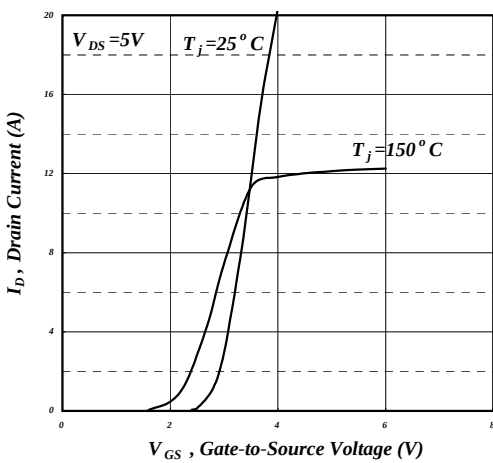
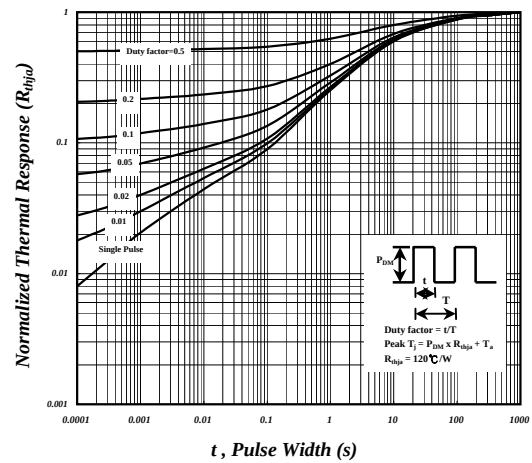
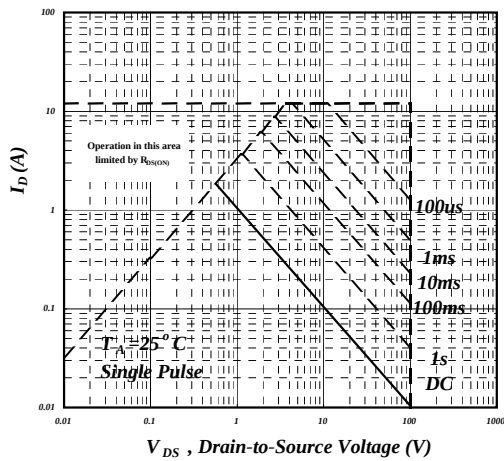
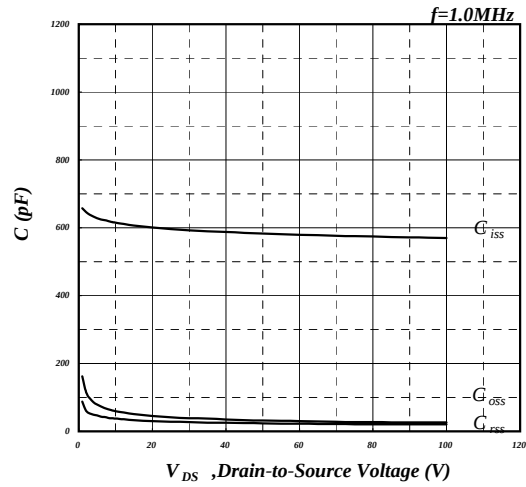
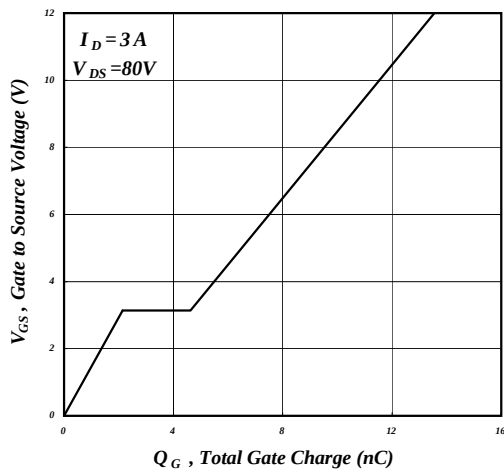


Fig 6. Gate Threshold Voltage v.s. Junction Temperature



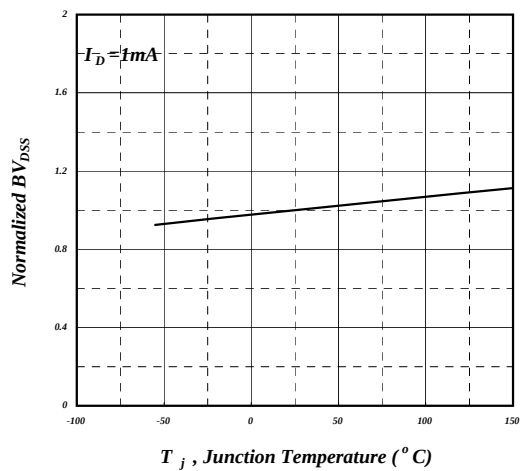


Fig 13. Normalized BV_{DSS} v.s. Junction Temperature

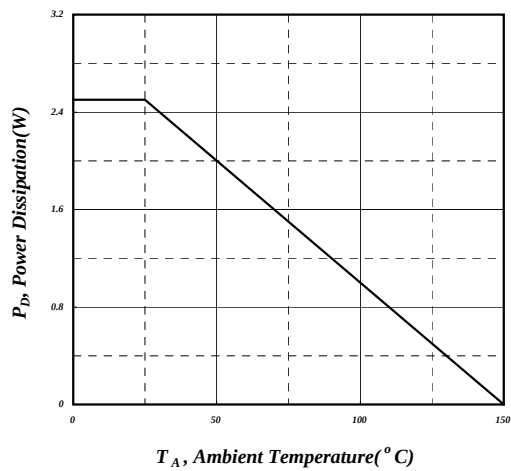


Fig 14. Total Power Dissipation

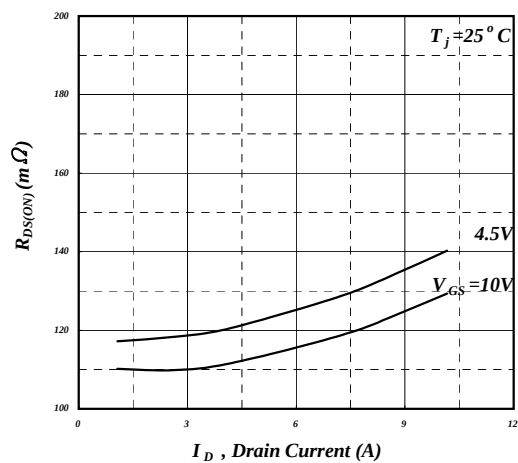
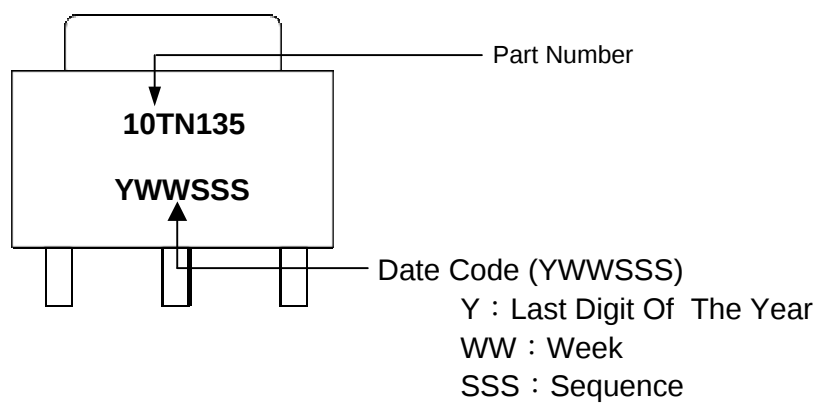


Fig 15. Typ. Drain-Source on State Resistance

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