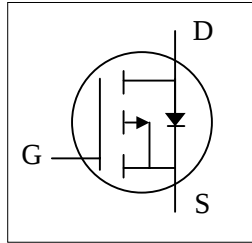


- ▼ Lower On-resistance
- ▼ Simple Drive Requirement
- ▼ Fast Switching Characteristic
- ▼ RoHS Compliant & Halogen-Free

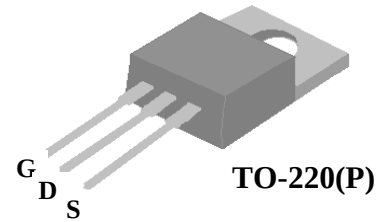


BV_{DSS}	-40V
$R_{DS(ON)}$	13.5m Ω
I_D	-65A

Description

XP6679 series are innovated 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 TO-220 package is widely preferred for all commercial-industrial through hole applications. The low thermal resistance and low package cost contribute to the worldwide popular package.



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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-40	V
V_{GS}	Gate-Source Voltage	± 25	V
$I_D@T_C=25^\circ\text{C}$	Drain Current, V_{GS} @ 10V	-65	A
$I_D@T_C=100^\circ\text{C}$	Drain Current, V_{GS} @ 10V	-41	A
I_{DM}	Pulsed Drain Current ¹	-260	A
$P_D@T_C=25^\circ\text{C}$	Total Power Dissipation	89	W
	Linear Derating Factor	0.71	W/ $^\circ\text{C}$
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	Unit
R_{thj-c}	Maximum Thermal Resistance, Junction-case	1.4	$^\circ\text{C}/\text{W}$
R_{thj-a}	Maximum Thermal Resistance, Junction-ambient	62	$^\circ\text{C}/\text{W}$

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	-40	-	-	V
ΔBV _{DSS} /ΔT _j	Breakdown Voltage Temperature Coefficient	Reference to 25°C, I _D =-1mA	-	-0.02	-	V/°C
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =-10V, I _D =-28A	-	-	13.5	mΩ
		V _{GS} =-4.5V, I _D =-20A	-	-	20	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250uA	-0.8	-	-2.5	V
g _{fs}	Forward Transconductance	V _{DS} =-10V, I _D =-24A	-	24	-	S
I _{DSS}	Drain-Source Leakage Current	V _{DS} =-40V, V _{GS} =0V	-	-	-1	uA
	Drain-Source Leakage Current (T _j =125°C)	V _{DS} =-32V, V _{GS} =0V	-	-	-250	uA
I _{GSS}	Gate-Source Leakage	V _{GS} = ±25V, V _{DS} =0V	-	-	±100	nA
Q _g	Total Gate Charge	I _D =-16A	-	43	70	nC
Q _{gs}	Gate-Source Charge	V _{DS} =-32V	-	7	-	nC
Q _{gd}	Gate-Drain ("Miller") Charge	V _{GS} =-4.5V	-	26	-	nC
t _{d(on)}	Turn-on Delay Time	V _{DS} =-20V	-	11	-	ns
t _r	Rise Time	I _D =-16A	-	40	-	ns
t _{d(off)}	Turn-off Delay Time	R _G =3.3Ω, V _{GS} =-10V	-	50	-	ns
t _f	Fall Time	R _D =0.8Ω	-	80	-	ns
C _{iss}	Input Capacitance	V _{GS} =0V	-	2870	4590	pF
C _{oss}	Output Capacitance	V _{DS} =-25V	-	960	-	pF
C _{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	740	-	pF
R _g	Gate Resistance	f=1.0MHz	-	2.5	3.75	Ω

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V _{SD}	Forward On Voltage ²	I _S =-20A, V _{GS} =0V	-	-	-1.2	V
t _{rr}	Reverse Recovery Time	I _S =-16A, V _{GS} =0V,	-	37	-	ns
Q _{rr}	Reverse Recovery Charge	dI/dt=-100A/μs	-	42	-	nC

Notes:

- 1.Pulse width limited by Max. junction temperature.
- 2.Pulse test

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.

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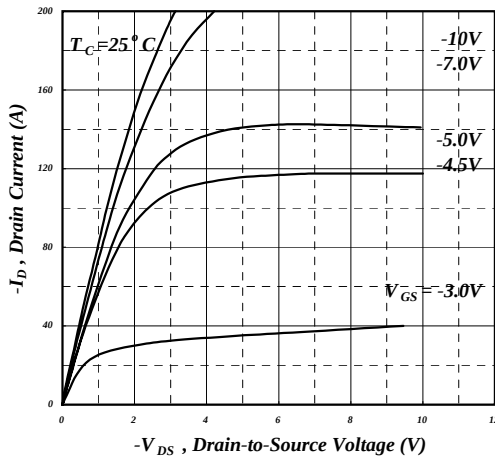


Fig 1. Typical Output Characteristics

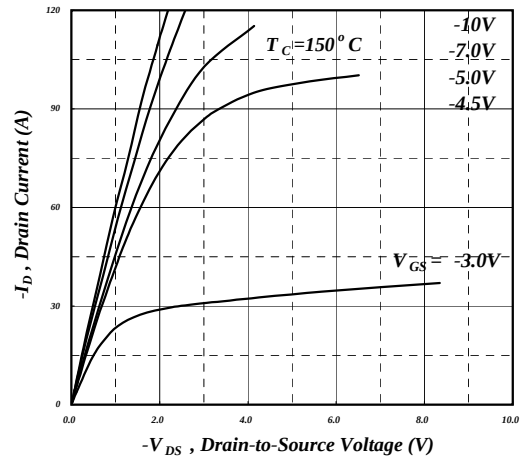


Fig 2. Typical Output Characteristics

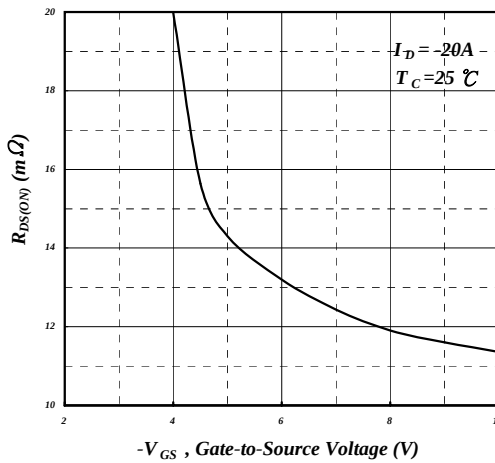
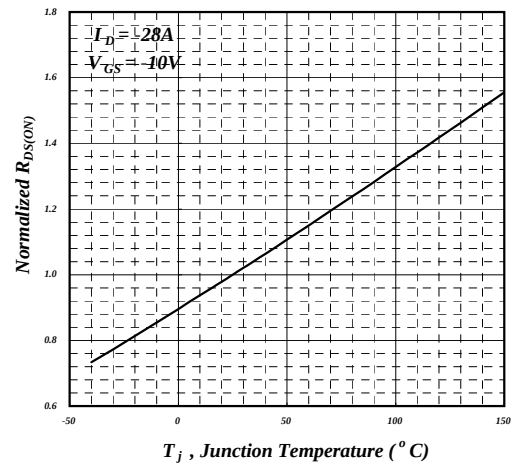
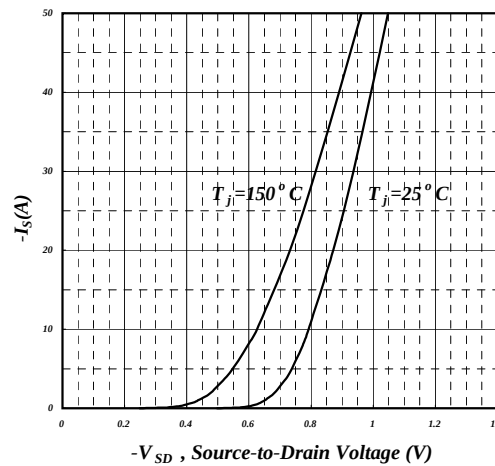


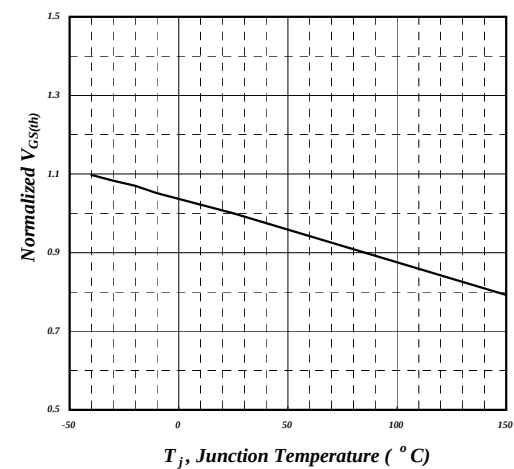
Fig 3. On-Resistance v.s. Gate Voltage



**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**

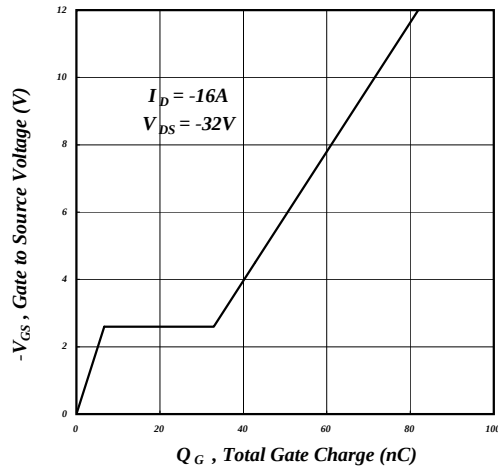


Fig 7. Gate Charge Characteristics

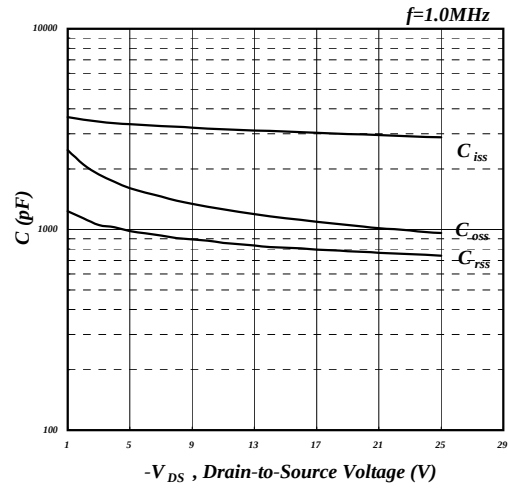


Fig 8. Typical Capacitance Characteristics

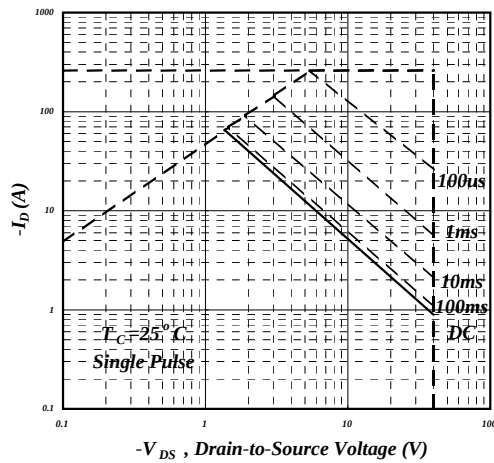


Fig 9. Maximum Safe Operating Area

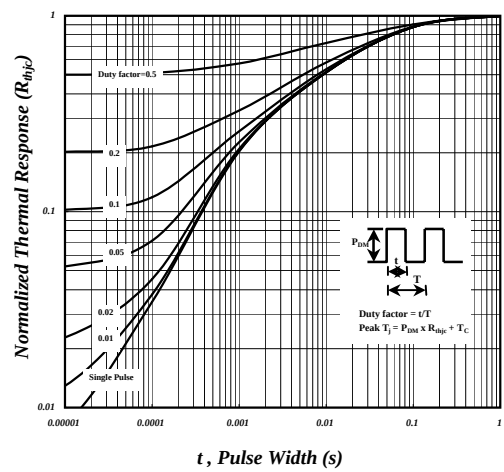


Fig 10. Effective Transient Thermal Impedance

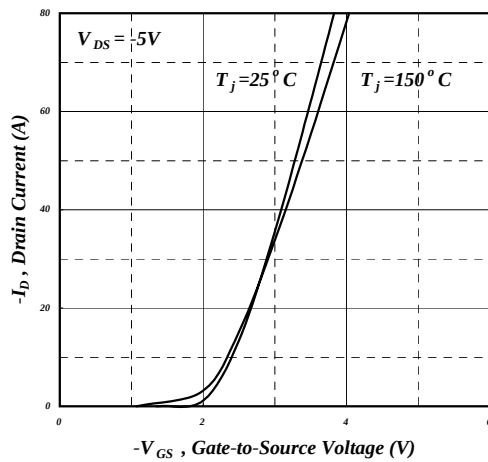


Fig 11. Transfer Characteristics

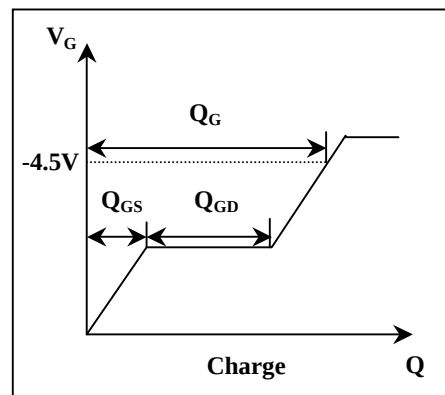
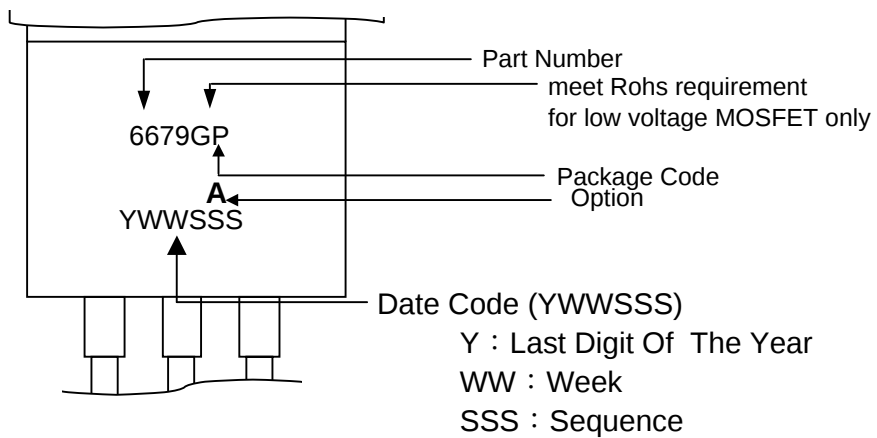
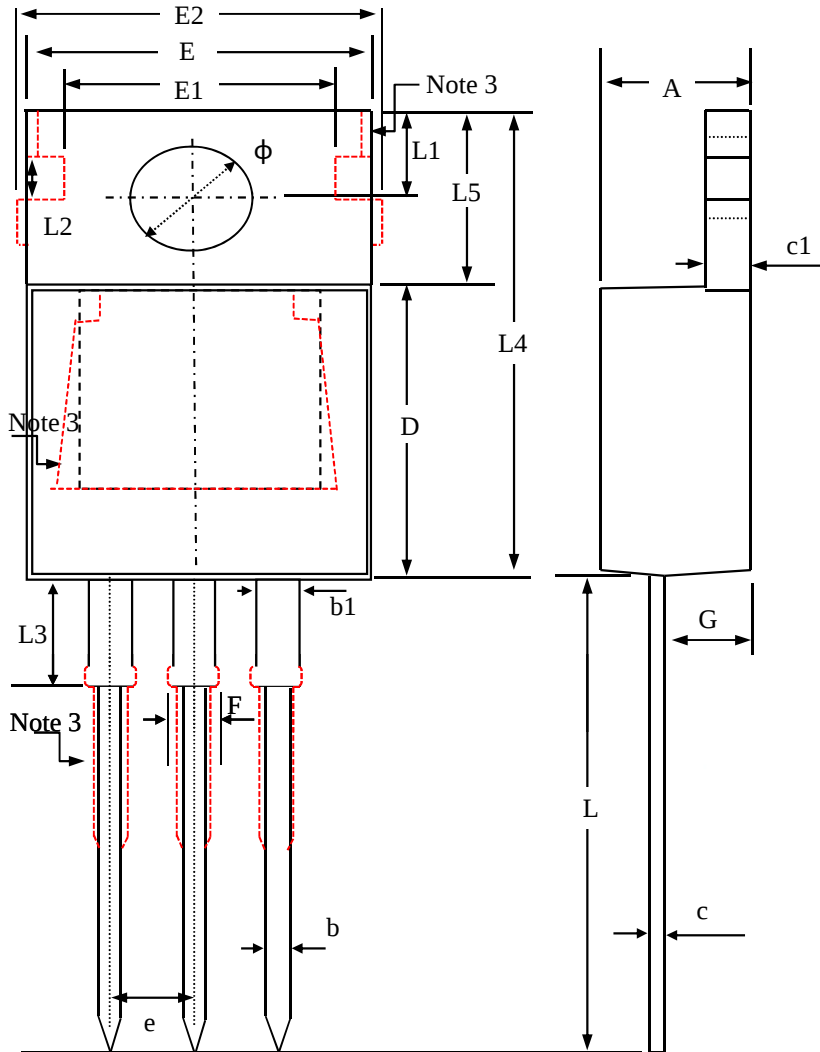


Fig 12. Gate Charge Waveform

MARKING INFORMATION

Package Outline : TO-220



SYMBOLS	Millimeters		
	MIN	NOM	MAX
A	4.20	4.50	4.80
b	0.60	0.80	1.00
b1	1.10	1.38	1.80
c	0.30	0.48	0.65
c1	1.10	1.30	1.50
E	9.70	10.00	10.40
E1	7.40	8.30	9.20
e	2.54 (ref.)		
L	12.70	13.60	14.50
L1	2.50	2.75	3.00
L2	1.00	1.40	1.80
L3	2.60	3.35	4.10
L4	14.30	15.15	16.00
L5	6.00	6.40	6.80
ϕ	3.40	3.70	4.00
D	8.30	8.85	9.40
F	1.20	1.41	1.85
G	2.20	2.60	3.00
E2	—	—	11.50

Note:

- 1.All Dimensions Are in Millimeters.
- 2.Dimension Does Not Include Mold Protrusions.
3. Thermal PAD and Pin contour is for reference, it may have little difference by option.

TO-220 FOOTPRINT :

