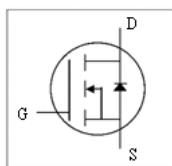
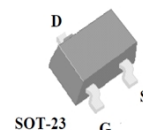


- Fast Switching Characteristic
- Low Gate Charger
- Small Footprint & Low Profile Package
- RoHS Compliant & Halogen-Free



BVDSS	30V
RDS(ON)typ	19mΩ
ID	5.8A



Description

KE8120 is from Kingeavy 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

The SOT-23 package is widely preferred for commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters.

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

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	30	V
V _{GS}	Gate-Source Voltage	±12	V
I _D @T _A =25°C	Drain Current, V _{GS} @ 10V ₃	5.8	A
I _D @T _A =70°C	Drain Current, V _{GS} @ 10V ₃	4.8	A
I _{DM}	Pulsed Drain Current ¹	20	A
P _D @T _A =25°C	Total Power Dissipation ₃	1.25	W
T _{STG}	Storage Temperature Range	-55 to 150	°C
T _J	Operating Junction Temperature Range	150	°C

Thermal Data

Symbol	Parameter	Value	Unit
Rthj-a	Maximum Thermal Resistance, Junction-ambient ₃	62.5	°C/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	30	-	-	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =5.6A	-	19	29	mΩ
		V _{GS} =4.5V, I _D =5A	-	22	35	mΩ
		V _{GS} =2.5V, I _D =2A	-	33	48	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	0.7	0.9	1.3	V
g _{fs}	Forward Transconductance	V _{DS} =5V, I _D =5A	-	10	-	S
I _{DSS}	Drain-Source Leakage Current	V _{DS} =30V, V _{GS} =0V	-	-	1	uA
I _{GSS}	Gate-Source Leakage	V _{GS} =±12V, V _{DS} =0V	-	-	±100	nA
Q _g	Total Gate Charge ²	I _D =5.8A	-	6	9.6	nC
Q _{gs}	Gate-Source Charge	V _{DS} =15V	-	2	-	nC
Q _{gd}	Gate-Drain ("Miller") Charge	V _{GS} =4.5V	-	3	-	nC
t _{d(on)}	Turn-on Delay Time	V _{DS} =15V	-	6	-	ns
t _r	Rise Time	I _D =1A	-	6	-	ns
t _{d(off)}	Turn-off Delay Time	R _G =3.3Ω	-	15	-	ns
t _f	Fall Time	V _{GS} =10V	-	3.5	-	ns
C _{iss}	Input Capacitance	V _{GS} =0V	-	460	740	pF
C _{oss}	Output Capacitance	V _{DS} =25V	-	80	-	pF
Crss	Reverse Transfer Capacitance	f=1.0MHz	-	70	-	pF
R _g	Gate Resistance	f=1.0MHz	-	1.9	-	Ω

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V _{SD}	Forward On Voltage ²	I _S =1A, V _{GS} =0V	-	0.7	1.2	V
t _{rr}	Reverse Recovery Time	I _S =5A, V _{GS} =0V dI/dt=100A/μs	-	14	-	ns
Q _{rr}	Reverse Recovery Charge		-	10	-	nC

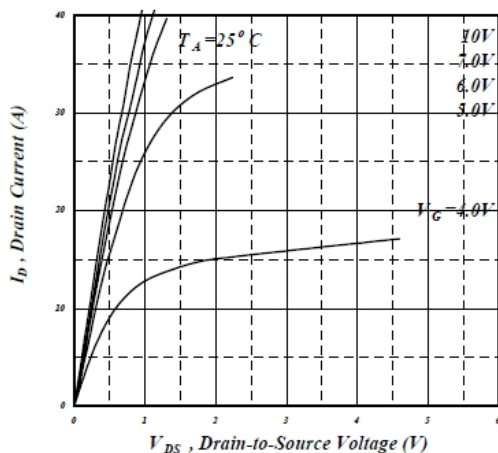


Fig 1. Typical Output Characteristics

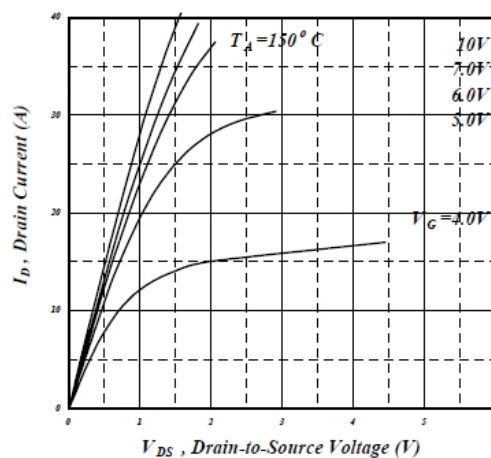


Fig 2. Typical Output Characteristics

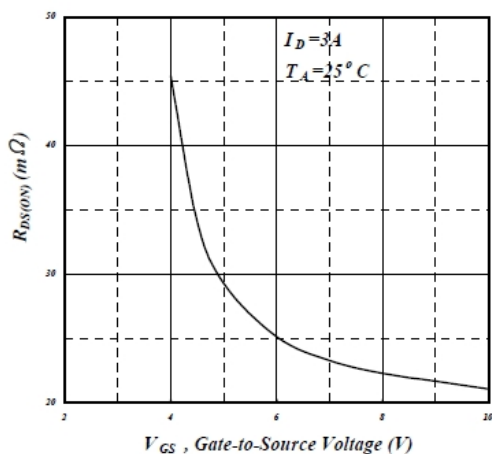
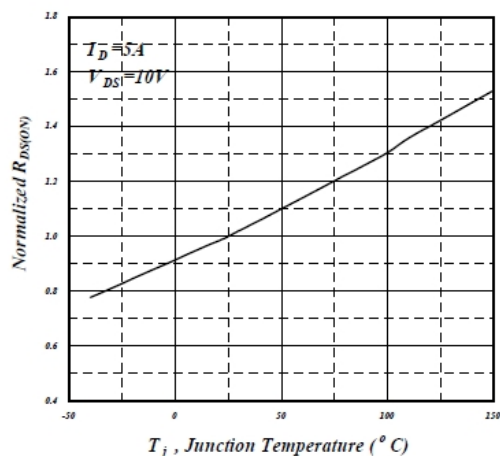
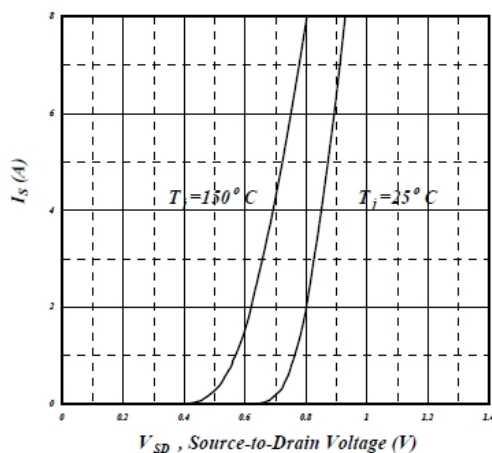


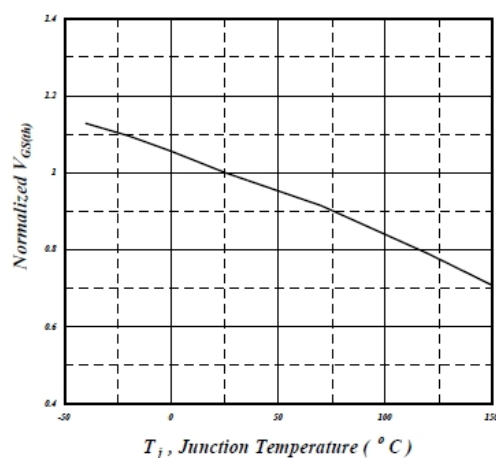
Fig 3. On-Resistance v.s. Gate Voltage



**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**

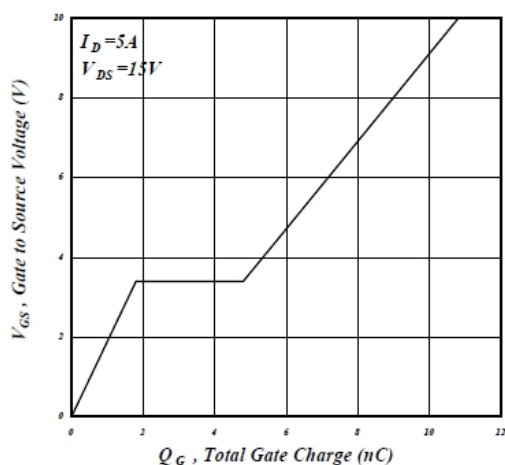


Fig 7. Gate Charge Characteristics

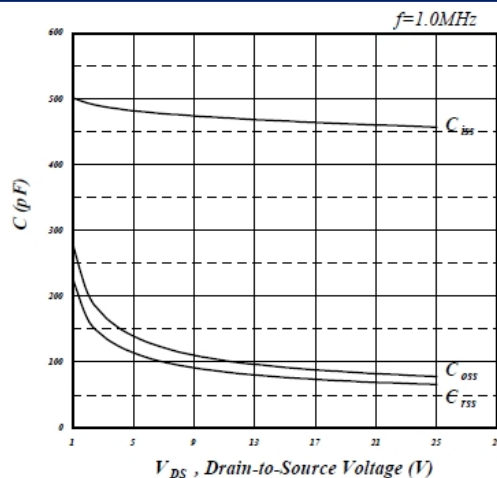


Fig 8. Typical Capacitance Characteristics

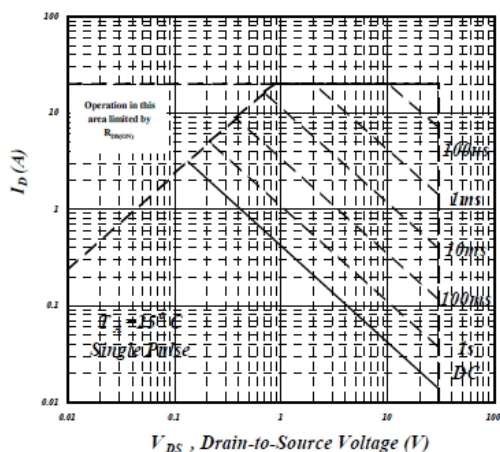


Fig 9. Maximum Safe Operating Area

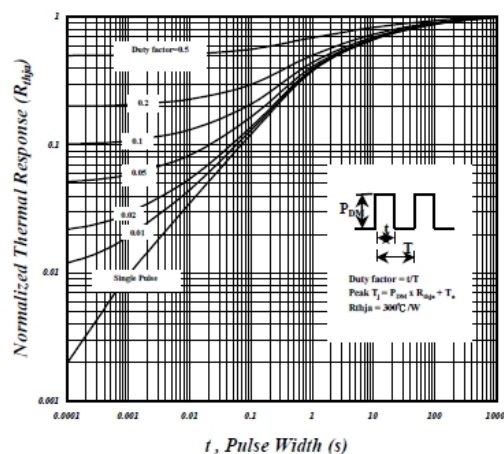


Fig 10. Effective Transient Thermal Impedance

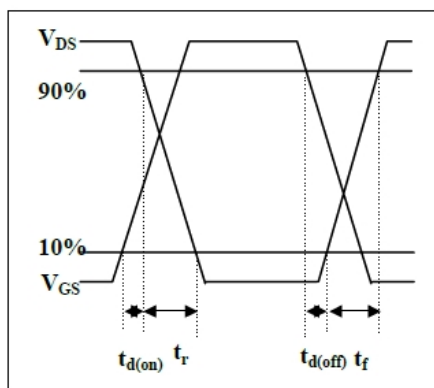


Fig 11. Switching Time Waveform

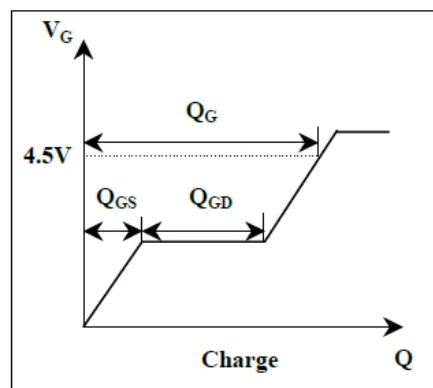
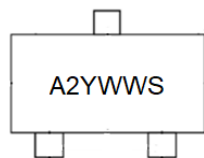


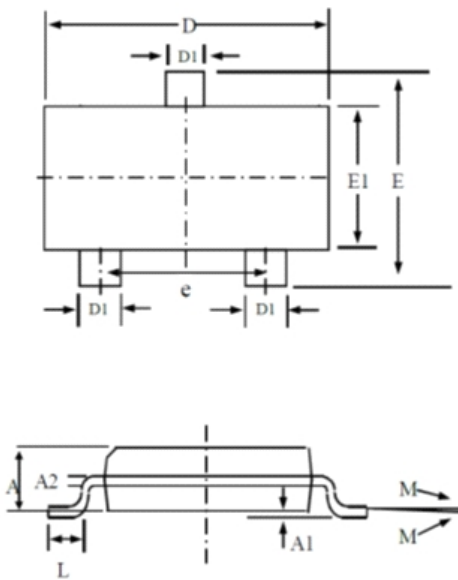
Fig 12. Gate Charge Waveform

Marking Information



Package	SOT-23	
A2	PN code	KE8120T0U
Y	Year	F=2020 , G=2021,
WW	Weeks	Ex. 2020 3/2=10week, 4/6=15week
S	Serial	Serial No.

Package Outline : SOT-23



SYMBOLS	Millimeters		
	MIN	NOM	MAX
A	0.80	1.00	1.20
A1	0.00	—	0.10
A2	0.05	—	0.20
D1	0.30	0.40	0.50
e	1.80	1.90	2.00
D	2.80	2.90	3.10
E	2.10	2.40	2.70
E1	1.20	1.30	1.40
M	0°	5°	10°
L	0.20	—	0.60

- 1.All Dimension Are In Millimeters.
- 2.Dimension Does Not Include Mold Protrusions.

SOT-23 FOOTPRINT: (mm)

