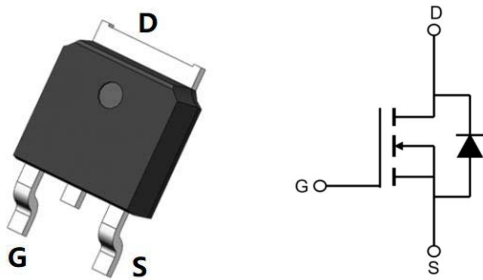


### General Description

The KSD6028 power MOSFET is produced with advanced technology of KORSUN. This technology enable the power MOSFET to have better characteristics, including fast switching time, low on resistance, low gate charge and especially excellent avalanche characteristics.

### TO-252 Pin Configuration



### Product Summary

V <sub>DS</sub> (V)	R <sub>DS(on)</sub> (mΩ)	I <sub>b</sub> (A)
60	25 at V <sub>GS</sub> = 10 V	28
	29 at V <sub>GS</sub> = 4.5V	25

### Features

- High density cell design for ultra low R<sub>dson</sub>
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high E<sub>AS</sub>
- Excellent package for good heat dissipation

### Applications

- Motor control and drive
- Battery management
- Uninterruptible power supply

### Absolute Maximum Ratings T<sub>c</sub>=25°C unless otherwise noted

Symbol	Parameter	Rating	Units
V <sub>DS</sub>	Drain-Source Voltage	60	V
V <sub>GS</sub>	Gate-Source Voltage	±20	V
I <sub>b</sub>	Drain Current – Continuous (T <sub>c</sub> =25°C)	28	A
	Drain Current – Continuous (T <sub>c</sub> =100°C)	14.5	A
I <sub>BM</sub>	Drain Current – Pulsed <sup>1</sup>	65	A
P <sub>D</sub>	Power Dissipation (T <sub>c</sub> =25°C)	30	W
	Power Dissipation (T <sub>c</sub> =100°C)	1.1	W/°C
T <sub>STG</sub>	Storage Temperature Range	-55 to 150	°C
T <sub>J</sub>	Operating Junction Temperature Range	-55 to 150	°C

### Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
R <sub>θJA</sub>	Thermal Resistance Junction to ambient	---	60	°C/W
R <sub>θJC</sub>	Thermal Resistance Junction to Case	---	3	°C/W

### Electrical Characteristics (T<sub>J</sub>=25 °C, unless otherwise noted) Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V , I <sub>D</sub> =250uA	60	---	---	V
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =55V , V <sub>GS</sub> =0V , T <sub>J</sub> =25°C	---	---	1	uA
		V <sub>DS</sub> =55V , V <sub>GS</sub> =0V , T <sub>J</sub> =125°C	---	---	10	uA
I <sub>GSS</sub>	Gate-Source Leakage Current	V <sub>GS</sub> =±20V , V <sub>DS</sub> =0V	---	---	±100	nA

### On Characteristics

R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance	V <sub>GS</sub> = 10V, I <sub>D</sub> =10A	---	25	30	mΩ
		V <sub>GS</sub> = 4.5V, I <sub>D</sub> =5A	---	29	34	mΩ
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA	1.0	1.6	3.0	V
g <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> =1V , I <sub>S</sub> =10A	---	15	---	S

### Dynamic and switching Characteristics

Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =30V V <sub>GS</sub> =10V , I <sub>D</sub> =10A	---	25	---	nC
Q <sub>gs</sub>	Gate-Source Charge		---	4.6	---	
Q <sub>gd</sub>	Gate-Drain Charge		---	6.8	---	
T <sub>d(on)</sub>	Turn-On Delay Time	V <sub>DS</sub> =30V V <sub>GS</sub> =10V, R <sub>G</sub> =3Ω	---	8	---	ns
T <sub>r</sub>	Rise Time		---	22	---	
T <sub>d(off)</sub>	Turn-Off Delay Time		---	17	---	
T <sub>f</sub>	Fall Time		---	24	---	
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =30V V <sub>GS</sub> =0V , F=1MHz	---	620	---	pF
C <sub>oss</sub>	Output Capacitance		---	68	---	
C <sub>riss</sub>	Reverse Transfer Capacitance		---	60	---	

### Drain-Source Diode Characteristics and Maximum Ratings

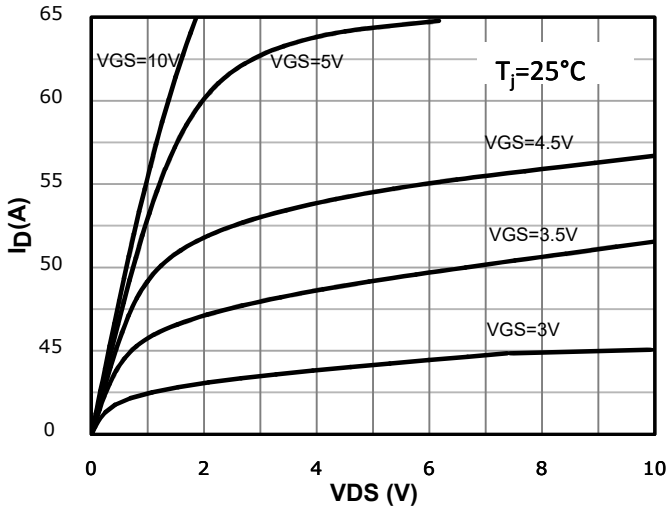
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I <sub>S</sub>	Continuous Source Current	V <sub>G</sub> =V <sub>D</sub> =0V , Force Current	---	---	28	A
I <sub>SM</sub>	Pulsed Source Current		---	---	55	A
V <sub>SD</sub>	Diode Forward Voltage	V <sub>GS</sub> =0V , I <sub>S</sub> =1A , T <sub>J</sub> =25°C	---	---	1.2	V

Note :

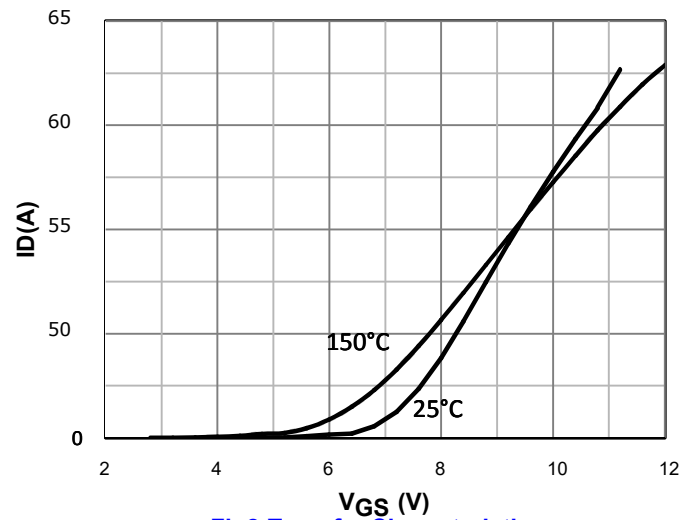
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production
5. EAS condition: T<sub>J</sub>=25°C, V<sub>DS</sub>=30V, V<sub>G</sub>=10V, L=0.5mH, R<sub>G</sub>=25Ω

**60V N-Channel MOSFET**

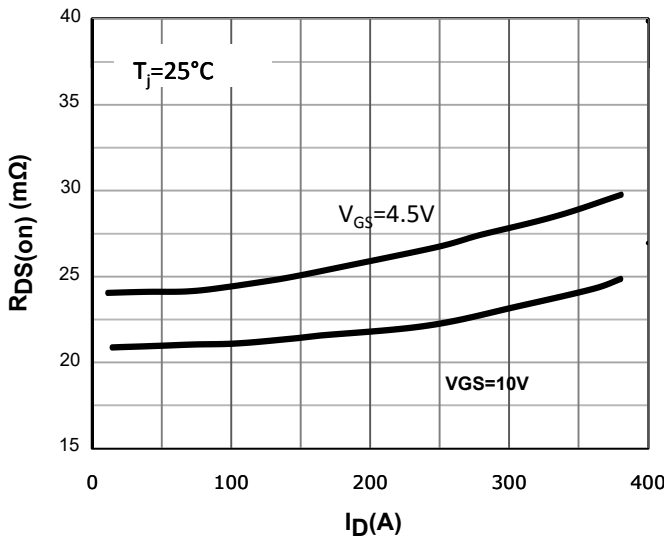
**Typical Electrical and Thermal Characteristics (Curves)**



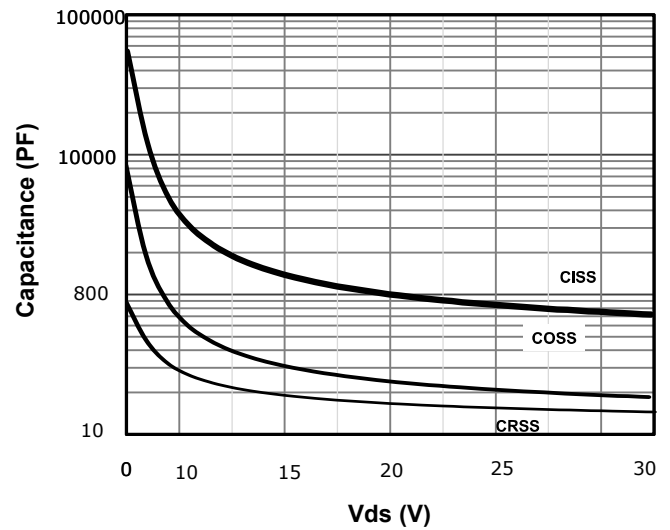
**Fig1: Output Characteristics**



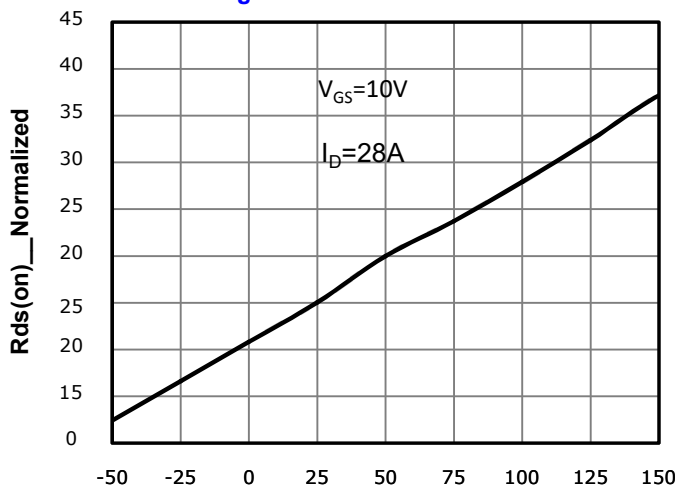
**Fig2: Transfer Characteristics**



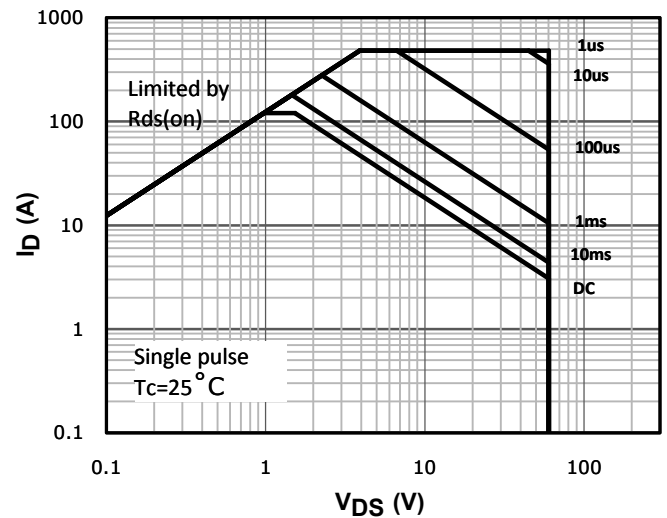
**Fig3: Rds(on) - Drain Current**



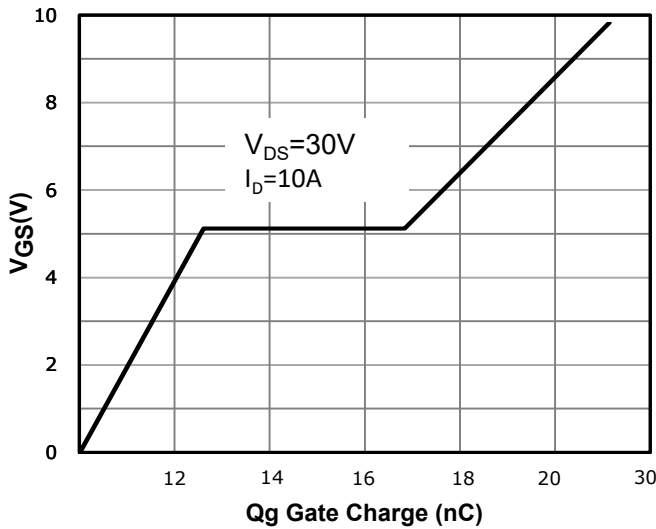
**Fig4: Capacitance vs Vds**



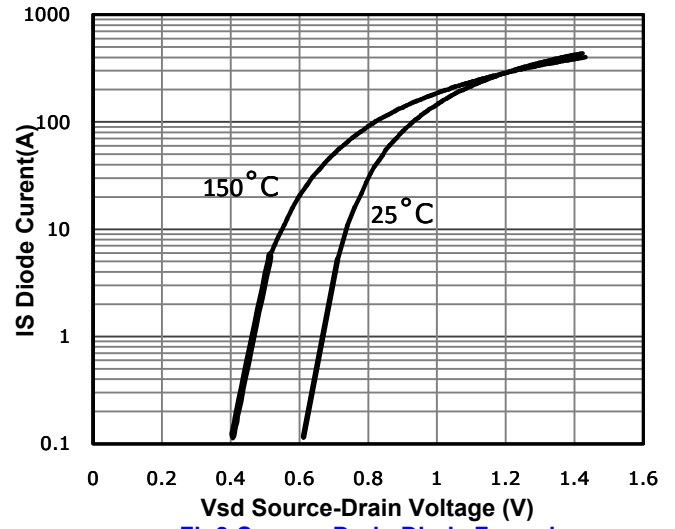
**Fig5: Rds(on) vs. Temperature**



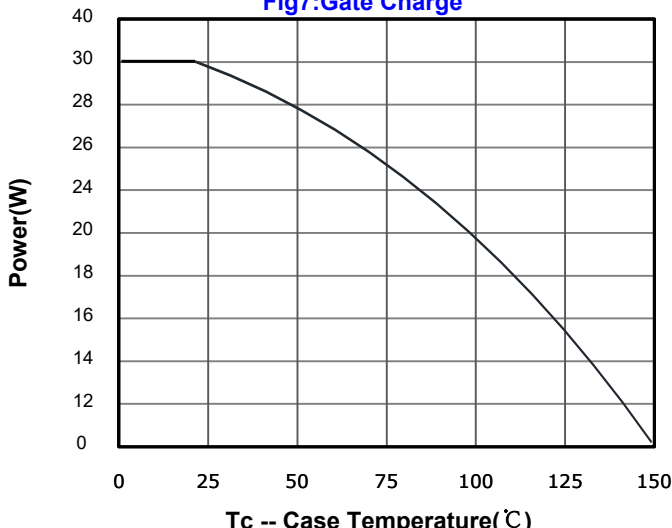
**Fig6: Safe Operating Area**



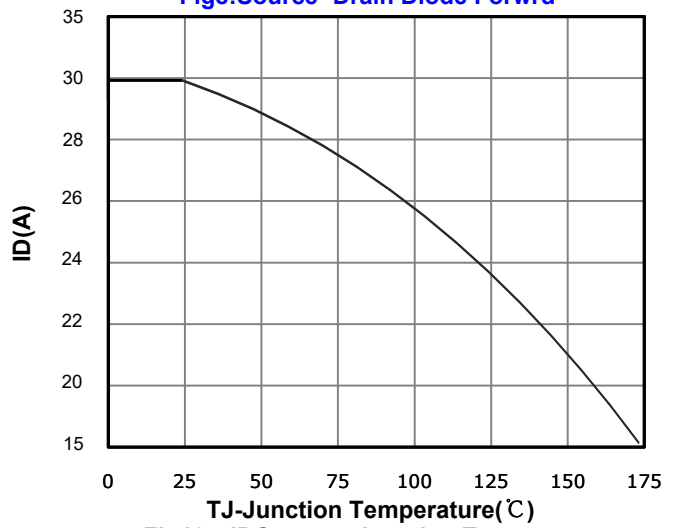
**Fig7: Gate Charge**



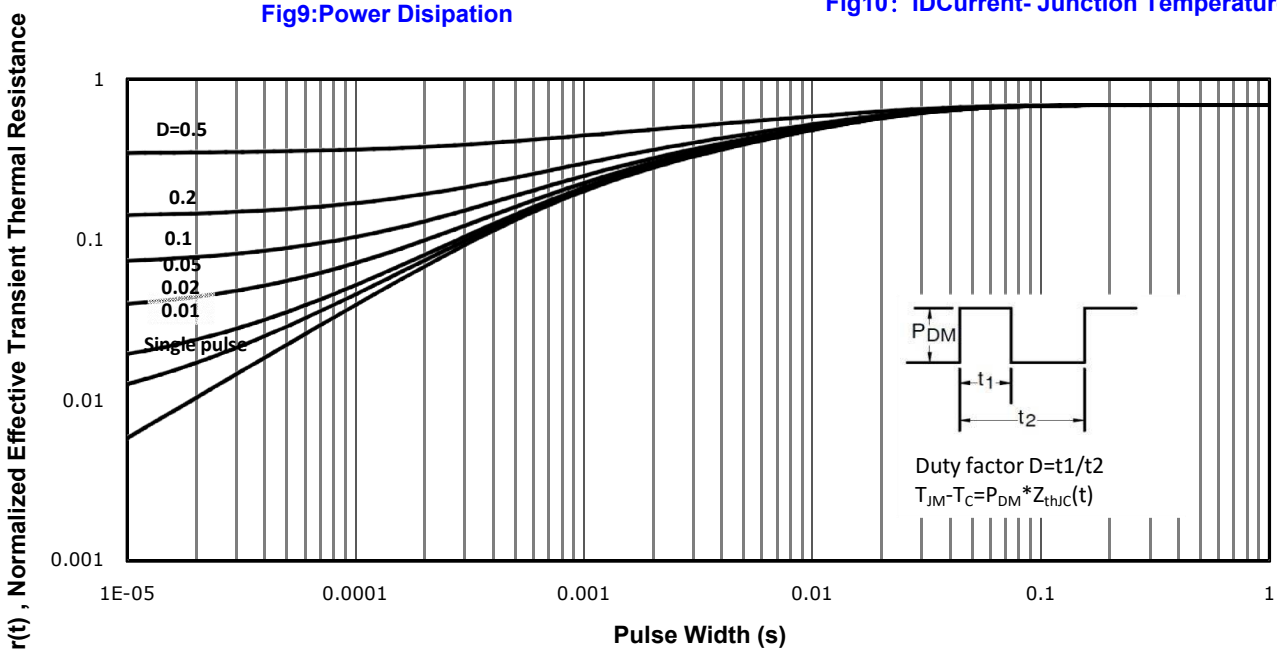
**Fig8: Source- Drain Diode Forward**



**Fig9: Power Disipation**



**Fig10: ID Current- Junction Temperature**



**Fig11: Normalized Maximum Transient Thermal Impedance**

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