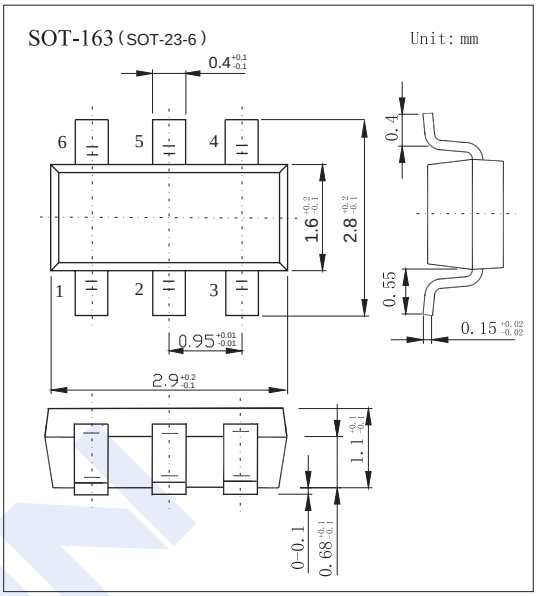
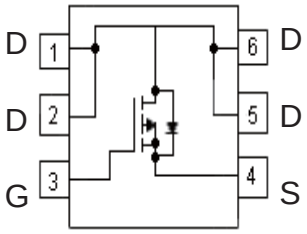
P-Channel MOSFET

2KJ6068



■ Features

- V_{DS} (V) =-60V
- I_D =-6.5 A
- $R_{DS(ON)}$ = 50mΩ @ V_{GS} = -10V
- $R_{DS(ON)}$ = 60mΩ @ V_{GS} = -4.5V



■ Absolute Maximum Ratings (T_A = 25°C, unless otherwise noted)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	-60	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current	T_C = 25 °C	I_D	-6.5	A
	T_C = 70 °C		-4.5	
	T_A = 25 °C		-3.8 [a,b]	
	T_A = 70 °C		-3.1 [a,b]	
Pulsed Drain Current		I_{DM}	-20	
Continuous Drain Current	T_C = 25 °C	I_S	-3.5	
	T_A = 25 °C		-1.7 [a,b]	
Avalanche Current	L = 0.1 mH	I_{AS}	-15	
Single Pulse Avalanche Energy		E_{AS}	11.25	mJ
Maximum Power Dissipation	T_C = 25 °C	P_D	4.2	W
	T_C = 70 °C		2.7	
	T_A = 25 °C		2 [a,b]	
	T_A = 70 °C		1.3 [a,b]	
Thermal Resistance, Junction- to-Ambient [a,c]	t ⩽ 10 s	$R_{\theta JA}$	62.5	℃/W
Thermal Resistance, Junction- to-Foot	Steady State	$R_{\theta JF}$	30	
Junction Temperature		T_J	150	℃
Junction Storage Temperature Range		T_{stg}	-55 to 150	

Notes: 1. Surface mounted on 1" x 1" FR4 board.

2. t = 10 s.

3. Maximum under steady state conditions is 110 °C/W.

4. Based on T_C = 25 °C.

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■ Electrical Characteristics (T_J = 25°C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	I_D=-250μA, V_{GS}=0V	-60			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-60V, V_{GS}=0V			-1	μA
		V_{DS}=-60V, V_{GS}=0V, T_J=55℃			-5	
Gate-Body Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±100	nA
On-State Drain Current [a]	$I_{D(on)}$	V_{DS} ⩾ -10 V, V_{GS} = -10 V	-30			A
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} , I_D=-250μA	-0.5		-2	V
Static Drain-Source On-Resistance [a]	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-3.5A		50		mΩ
		V_{GS}=-4.5V, I_D=-2.8A		60		
Forward Transconductance [a]	g_{fs}	V_{DS}=-30 V, I_D=-3.5 A		11		S
Dynamic [b]						
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=-30V, f=1MHz		832		pF
Output Capacitance	C_{oss}			88		
Reverse Transfer Capacitance	C_{rss}			63		
Total Gate Charge	Q_g	V_{DS}=-30 V, V_{GS}=-10V, I_D=-3.5 A		20	30	nC
		V_{DS}=-30 V, V_{GS}=-4.5V, I_D=-3.5 A		10.1	15.2	
Gate Source Charge	Q_{gs}			3.3		
Gate Drain Charge	Q_{gd}			3.9		
Gate Resistance	R_g	f = 1 MHz	1.8	9	18	Ω
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=-30 V, R_L=10.7 Ω, I_D≅-2.8 A, V_{GEN}=-10 V, R_g=1Ω		8	16	ns
Turn-On Rise Time	t_r			6	12	
Turn-Off Delay Time	$t_{d(off)}$			35	53	
Turn-Off Fall Time	t_f			16	24	
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=-30 V, R =10.7 Ω, I_D≅-2.8 A, V_{GEN}=-4.5V, R_g=1 Ω		40	60	ns
Turn-On Rise Time	t_r			28	42	
Turn-Off Delay Time	$t_{d(off)}$			31	47	
Turn-Off Fall Time	t_f			15	23	
Drain-Source Body Diode Characteristics						
Maximum Body-Diode Continuous Current	I_S	T_C = 25 °C			-3.5	A
Maximum Body-Diode Pulsed Current	I_{SM}				-20	
Diode Forward Voltage	V_{SD}	I_S = -2.8A,V_{GS}=0V		-0.85	-1.2	V
Body Diode Reverse Recovery Time	trr	I_F = -2.8 A, di/dt = 100 A/μs, T_J = 25 °C		32	48	ns
Body Diode Reverse Recovery Charge	Qrr			45	68	nC
Reverse Recovery Fall Time	t_a			24		ns
Reverse Recovery Rise Time	t_b			8		

Notes a. Pulse Test: Pulse width ⩽ 300μs, Duty cycle ⩽ 2%

b. Guaranteed by design, not subject to production testing.

■ Marking

Marking	6068 ‡

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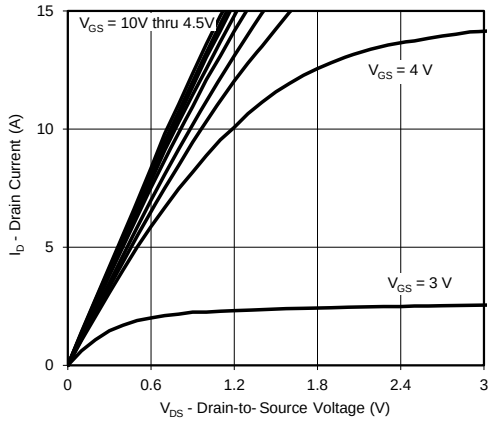
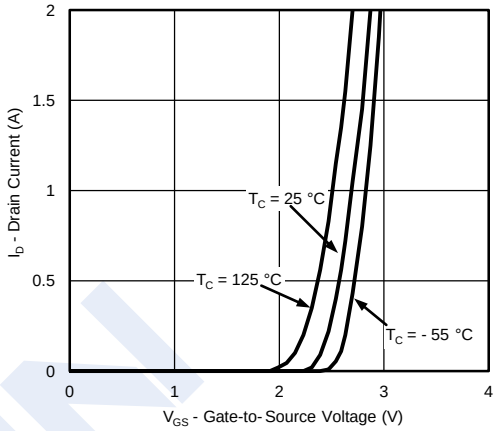
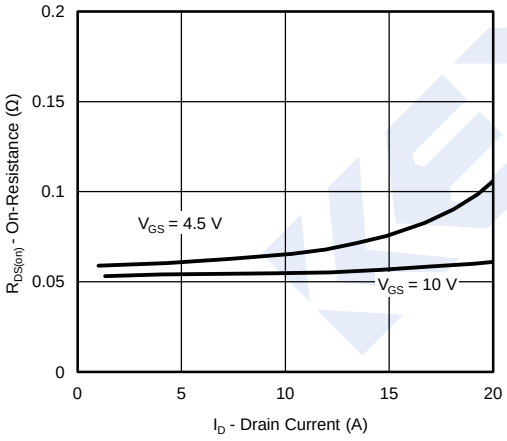
■ Typical Characterisitics (25 °C, unless otherwise noted)



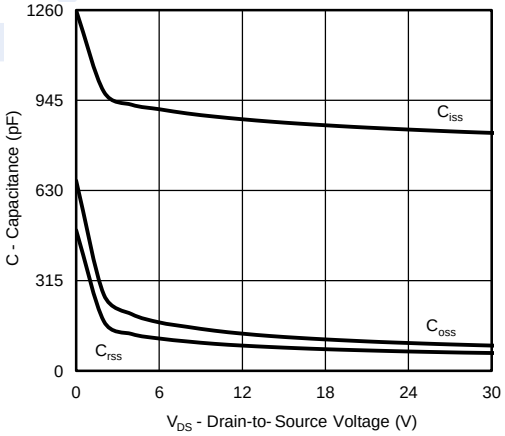
Output Characteristics



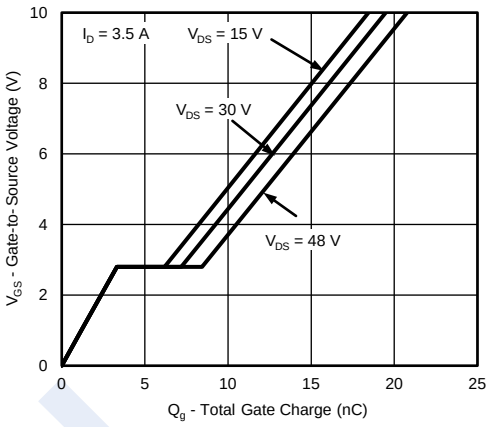
Transfer Characteristics



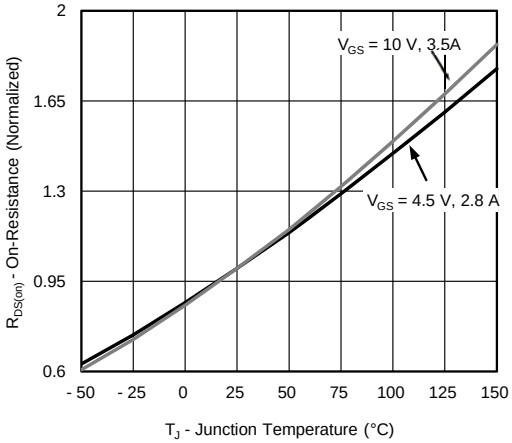
On-Resistance vs. Drain Current



Capacitance



Gate Charge



On-Resistance vs. Junction Temperature

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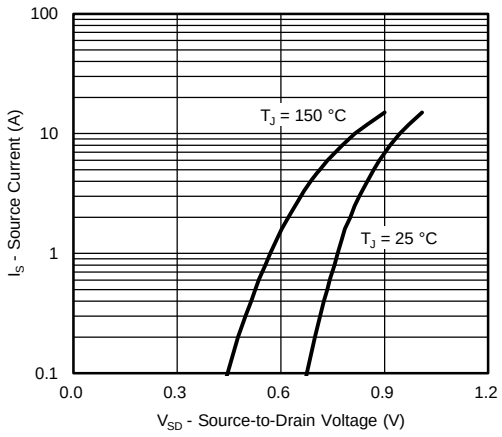
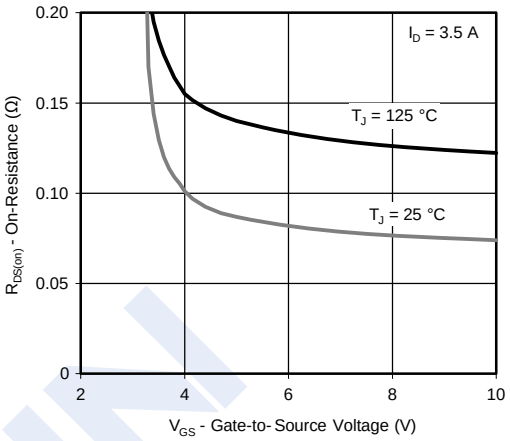
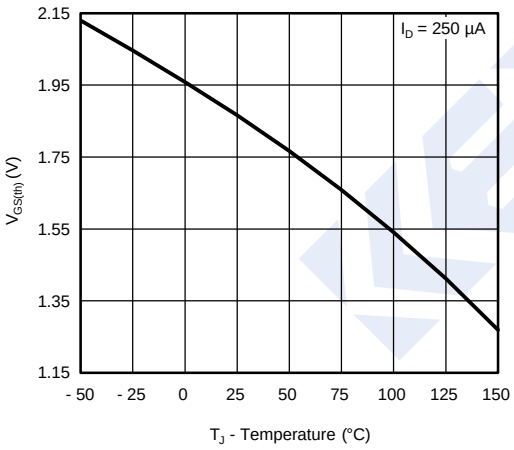


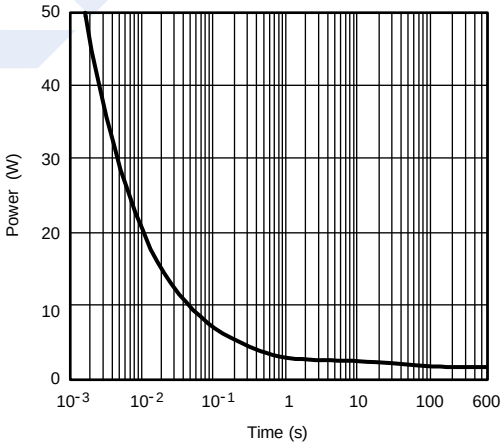
Source-Drain Diode Forward Voltage



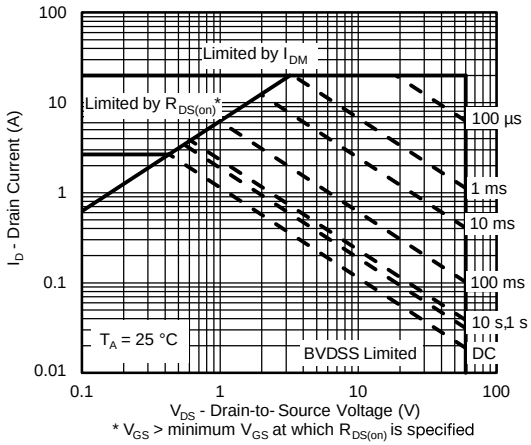
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power, Junction-to-Ambient



* V_{GS} > minimum V_{GS} at which $R_{DS(on)}$ is specified

Safe Operating Area

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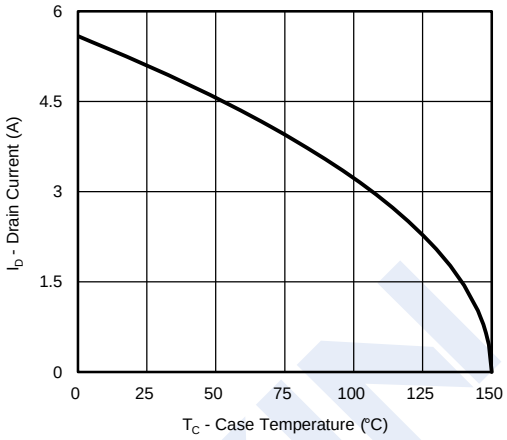
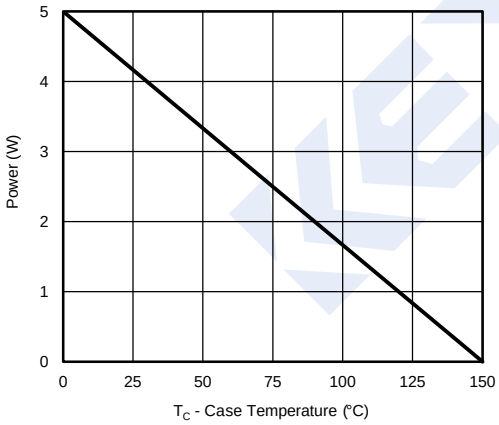
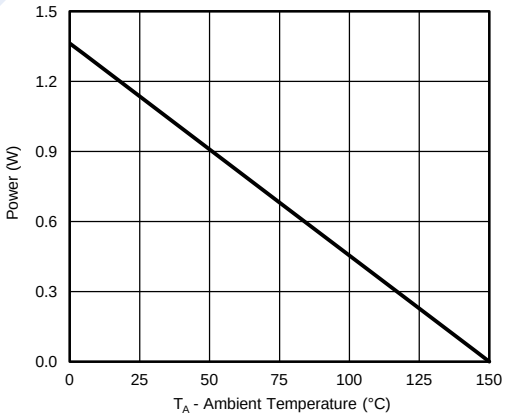
■ Typical Characterisitics (25 °C, unless otherwise noted)



Current Derating*



Power, Junction-to-Foot



Power Derating, Junction-to-Ambient

* The power dissipation P_D is based on $T_{J\ (max.)}$ = 150 °C, using junction-to-case thermal resistance, and is more useful in settling the upper dissipation limit for cases where additional heatsinking is used. It is used to determine the current rating, when this rating falls below the package limit.

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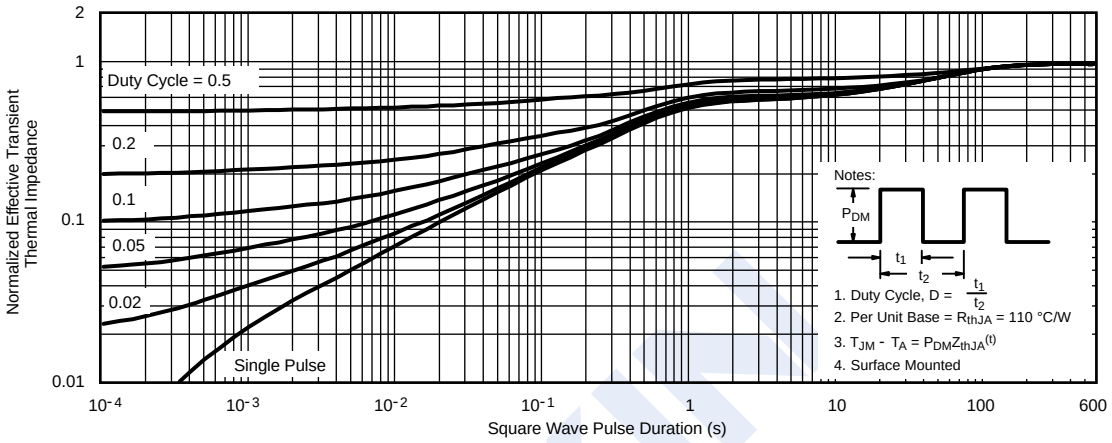
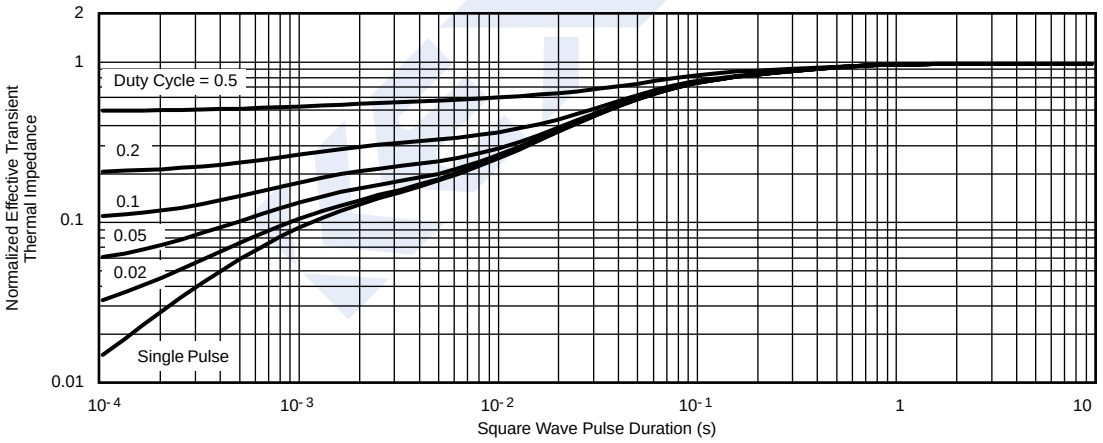


Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot