SIRECT
ELECTRONIC

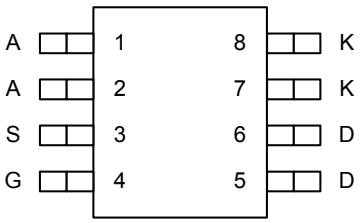
RSM5853P

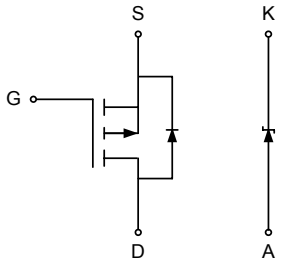
P-Channel 20Volt (D-S) MOSFET With Schottky Diode

Application

-These miniature surface mount MOSFET utilize a high cell density trench process to provide low RDS(on) and to provide low RDS(on) and to ensure minimal power loss and heat dissipation. Typical applications are DC-DC converters and power management in portable and battery-powered products such as coputers, printers, PCMCIA cards, cellular and cordless telephones.

CF 1206-8 TOP VIEW





Feature

-Low RDS(on) provides higger efficiency and extends battery life
-Low thermal impedance copper leadframe CF 1206-8 saves board space
-Fast switching speed
-High performance trench technology

Absolute Maximum Ratings

PARAMETER		SYMBOL	MAXIMUM	UNIT
Drain-Source Voltage (MOSFET)		VDS	-20	V
Reverse Voltage (Schottky)		VKA	20	
Gate-Source Voltage (MOSFET)		VGS	±8	
Continuous Drain Current @ TJ = 150°C (MOSFET) (Note 1)	TA = 25 °C	ID	±2.5	A
	TA = 70 °C		±1.9	
Pulsed Drain Current (MOSFET) (Note 2)		IDM	±10	
Continuous Source Current (MOSFET Diode Conduction) (Note 1)		IS	-1.6	
Average Forward Current (Schottky)		IF	0.5	
Pulsed Forward Current (Schottky)		IFM	8	
Maximum Power Dissipation (MOSFET) (Note 1)	TA = 25 °C	PD	2.1	W
	TA = 70 °C		1.1	
Maximum Power Dissipation (Schottky) (Note 1)	TA = 25 °C		1.3	
	TA = 70 °C		0.68	
Operating Junction and Storage Temperature Range		TJ , TSTG	-55 to +150	°C
Maximum Junction-to-Ambient	t ≦ 5sec	RθJA	60	°C/W
	Steady State		110	

Note: 1.Surface Mounted on 1" X 1" FR-4 Board
2.Pulse width limited by maximum junction temperature

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☐ MOSFET Specifications

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
STATIC						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-0.4			V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±8V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -16V, V_{GS} = 0V			-1	μA
		V_{DS} = -16V, V_{GS} = 0V, T_J = 55°C			-10	
On-State Drain Current (Note 1)	$I_{D(on)}$	V_{DS} = -5V, V_{GS} = -4.5V	-5			A
Drain-Source On-State Resistance (Note 1)	$R_{DS(on)}$	V_{GS} = -4.5V, I_D = -3.6A			0.110	Ω
		V_{GS} = -2.5V, I_D = -3.0A			0.160	
Forward Tranconductance (Note 1)	gfs	V_{DS} = -5V, I_D = -3.6A		3		S
Diode Forward Voltage	V_{SD}	I_S = -1.6A, V_{GS} = 0V		-0.70		V
DYNAMIC (Note 2)						
Total Gate Charge	Q_g	V_{DS} = -5V, V_{GS} = -4.5V, I_D = -3.6A		6.0		nC
Gate-Source Charge	Q_{gs}			0.8		
Gate-Drain Charge	Q_{gd}			1.3		
Turn-On Delay Time	$T_{d(on)}$	V_{DD} = -5V, R_L = 5Ω, V_{GEN} = -4.5V, R_G = 6Ω		6.5		nS
Rise Time	t_r			20		
Turn-Off Delay Times	$T_{d(off)}$			31		
Fall Time	t_f			21		

☐ Schottky Specifications

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Forward Voltage Drop	V_F	I_F = 0.5A			0.48	V
		I_F = 0.5A, T_J = 125°C			0.4	
Maximum Reverse Leakage Current	Irm	Vr = 30V			0.1	mA
		Vr = 30V, T_J = 75°C			1	
		Vr = 30V, T_J = 125°C			10	
Junction Capacitance	C_T	Vr = 10V		31		pF

Note: 1. Pulse Test : PW≦300μs duty cycle≦2%

2.Guaranteed by design, not subject to production tesing

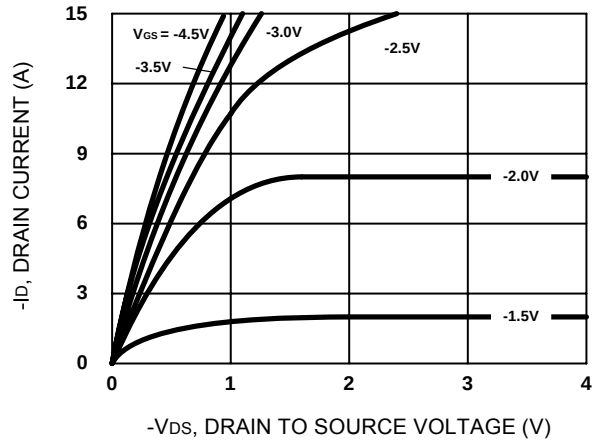


Figure 1. On-Region Characteristics

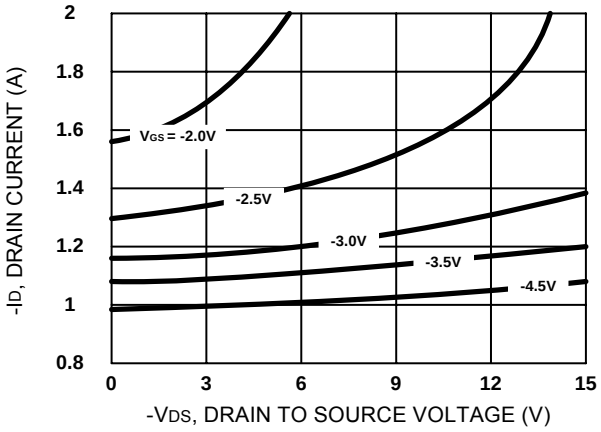


Figure 2. On-Resistance Variation with Drain Current and Gate Voltage

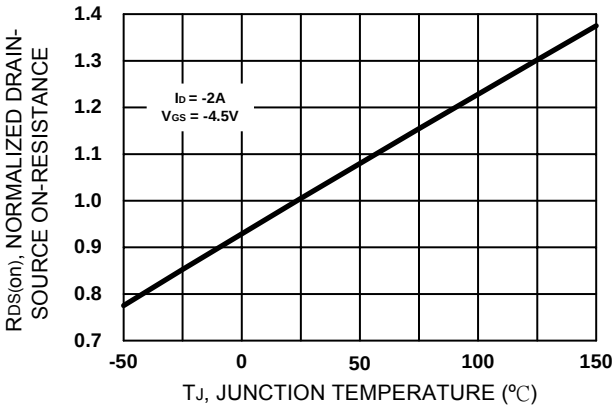


Figure 3. On-Resistance Variation with Temperature

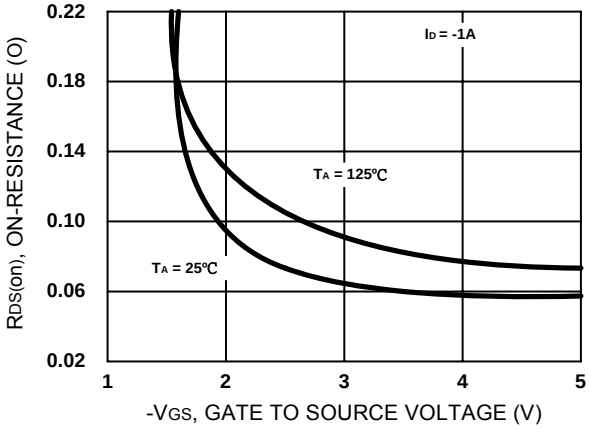


Figure 4. On-Resistance Variation with Gate to Source Voltage

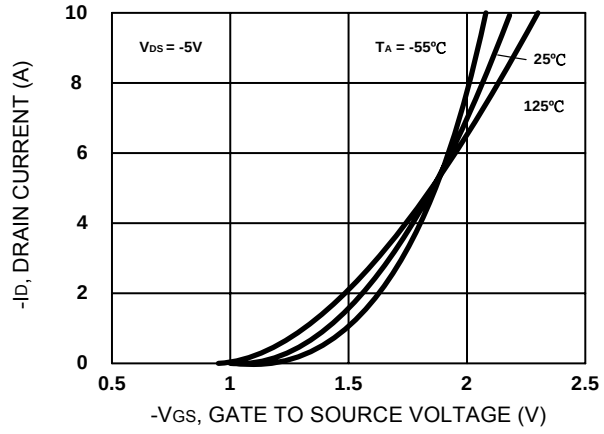


Figure 5. Transfer Characteristics

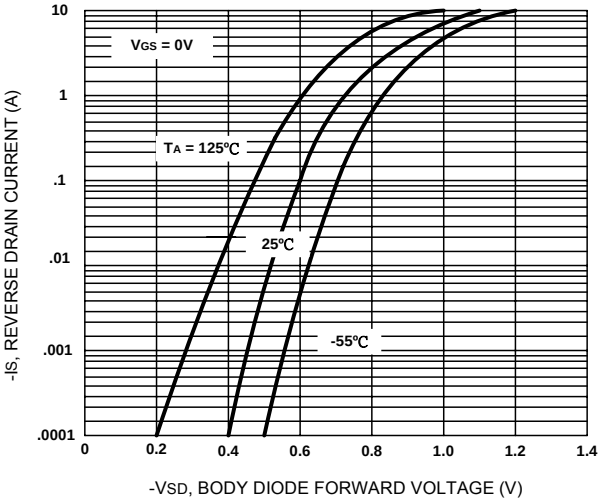


Figure 6. Body Diode Forward Voltage Variation with Source Current and Temperature

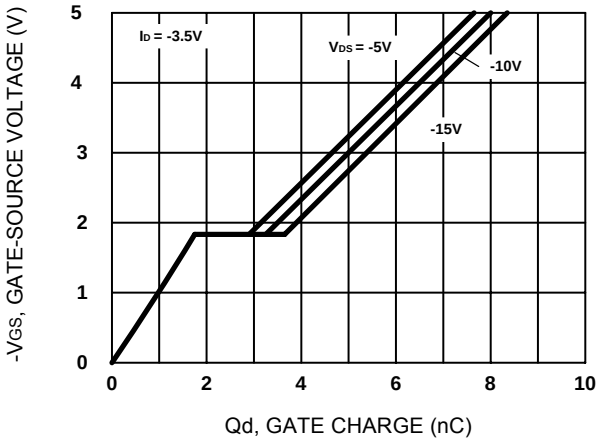


Figure 7. Gate Charge Characteristics

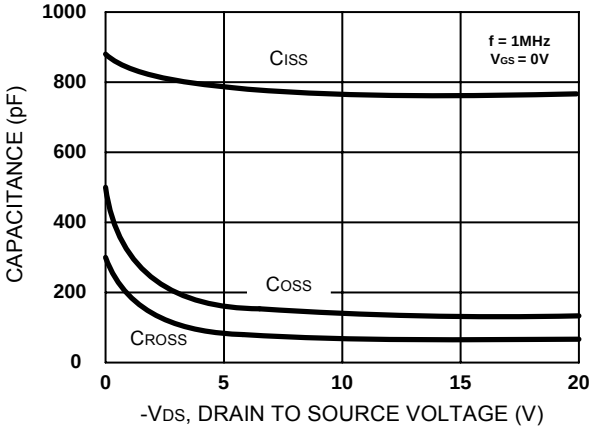


Figure 8. Capacitance Characteristics

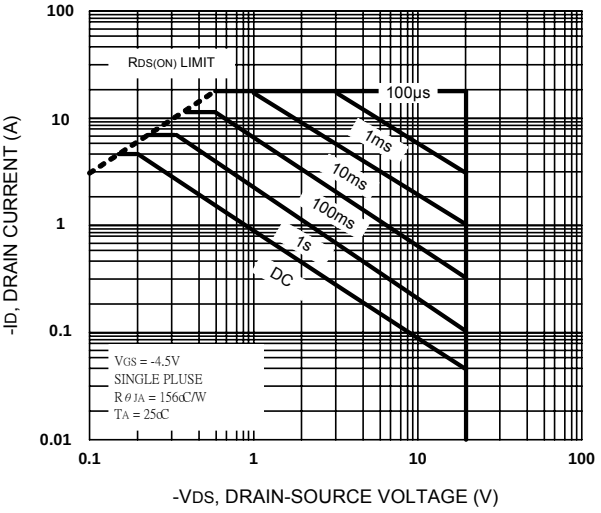


Figure 9. Maximum Safe Operating Area

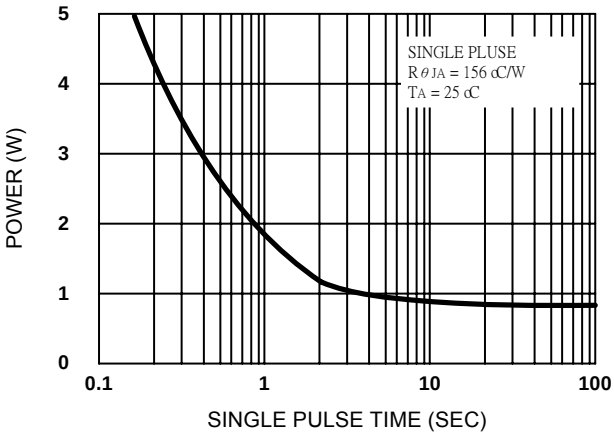


Figure 10. Single Pluse Maximum Power Dissipation

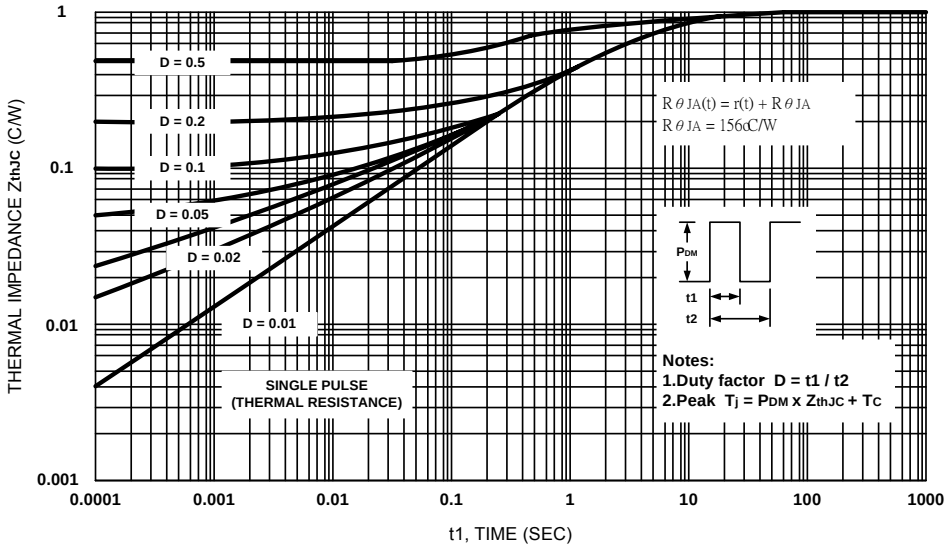
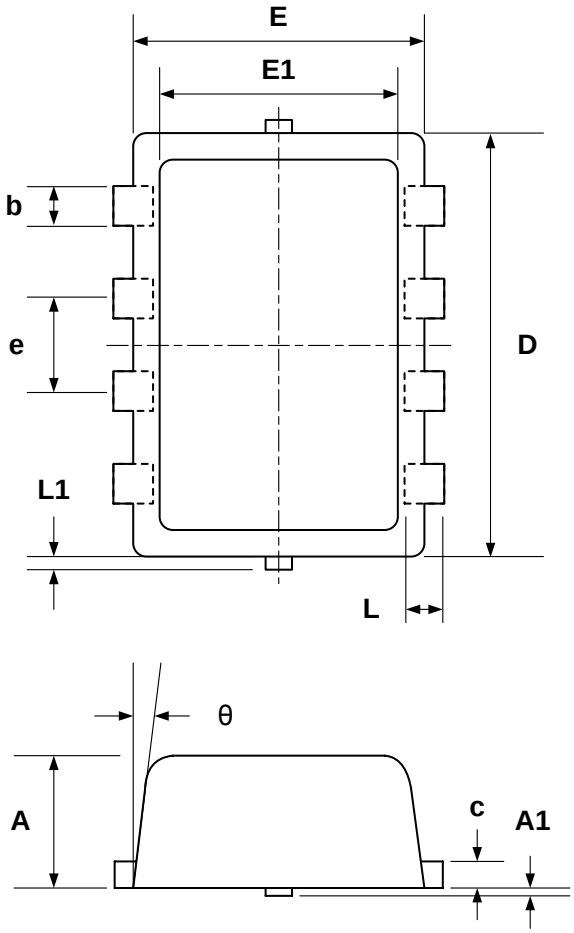


Figure 11. Transient Thermal Response Curve



DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.027	0.036	0.70	0.90	
A1	0.000	0.002	0.00	0.03	
b	0.009	0.014	0.24	0.35	
c	0.003	0.010	0.08	0.25	
D	0.118 BSC		3.00 BSC		
E	0.079 BSC		2.00 BSC		
E1	0.067 BSC		1.70 BSC		
e	0.026 BSC		0.65 BSC		
L	0.008	0.016	0.20	0.40	
L1	0.000	0.004	0.00	0.10	
θ	0°	12°	0°	12°	