Elektronische Bauelemente

SSD20P04-60D

P-Ch Enhancement Mode Power MOSFET

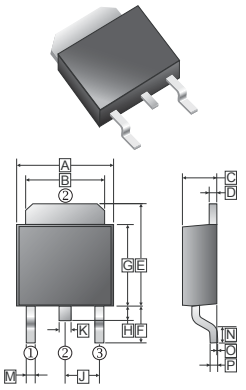
22A, -40V, $R_{DS(ON)}$ 69mΩ

RoHS Compliant Product
A suffix of "-C" specifies halogen free

DESCRIPTION

These miniature surface mount MOSFETs utilize a high cell density trench process to provide Low $R_{DS(on)}$ 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 computers, printers, PCMCIA cards, cellular and cordless telephones.

TO-252(D-Pack)



FEATURES

- Low $R_{DS(on)}$ provides higher efficiency and extends battery life.
- Low thermal impedance copper leadframe DPAK saves board space.
- Fast switching speed.
- High performance trench technology..

PRODUCT SUMMARY

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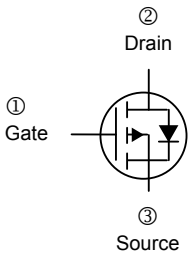
V_{DS}(V)	R_{DS}(on) m(Ω)	I_D(A)
-40	69@V_{GS}= -10V	22
	106@V_{GS}= -4.5V	18



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	6.4	6.8	J	2.30 REF.	
B	5.20	5.50	K	0.70	0.90
C	2.20	2.40	M	0.50	1.1
D	0.45	0.58	N	0.9	1.6
E	6.8	7.3	O	0	0.15
F	2.40	3.0	P	0.43	0.58
G	5.40	6.2			
H	0.8	1.20			

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DS}	-40	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current [a]	I_D	22	A
Pulsed Drain Current [b]	I_{DM}	±72	A
Continuous Source Current (Diode Conduction) [a]	I_S	-30	A
Total Power Dissipation [a]	P_D	50	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 ~ 175	°C
THERMAL RESISTANCE RATINGS			
Maximum Thermal Resistance Junction-Ambient [a]	$R_{\theta JA}$	50	°C / W
Maximum Thermal Resistance Junction-Case	$R_{\theta JC}$	3.0	°C / W

Notes :
a. Surface Mounted on 1" x 1" FR4 Board.
b. Pulse width limited by maximum junction temperature.

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ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise specified)

PARAMETER	SYMBO	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Static						
Gate-Threshold Voltage	$V_{GS(th)}$	-1	-	-		V_{DS}= V_{GS}, I_D = -250 μA
Gate-Body Leakage	I_{GSS}	-	-	±100	nA	V_{DS} = 0V, V_{GS}= ±25V
Zero Gate Voltage Drain Current	I_{DSS}	-	-	-1	μA	V_{DS}= -24V, V_{GS}= 0V
		-	-	-5		V_{DS}= -24V, V_{GS}=0V, T_J=55°C
On-State Drain Current [a]	$I_{D(on)}$	-41	-	-	A	V_{DS} = -5V, V_{GS}= -10V
Drain-Source On-Resistance [a]	$R_{DS(ON)}$	-	-	69	mΩ	V_{GS}= -10V, I_D= -22A
		-	-	106		V_{GS}= -4.5V, I_D= -18A
Forward Transconductance [a]	g_{fs}	-	31	-	S	V_{DS}= -15V, I_D= -22A
Diode Forward Voltage	V_{SD}	-	-0.7	-	V	I_S= -41 A, V_{GS}= 0 V
Dynamic [b]						
Total Gate Charge	Q_g	-	10	-	nC	V_{DS} = -15 V V_{GS} = -4.5 V I_D = -22 A
Gate-Source Charge	Q_{gs}	-	2.2	-		
Gate-Drain Charge	Q_{gd}	-	2.5	-		
Switching						
Turn-on Delay Time	$T_{d(on)}$	-	10	-	nS	V_{DD}= -15 V I_D= -24 A V_{GEN} = -10 V R_L= 15 Ω R_G= 6 Ω
Rise Time	T_r	-	2.8	-		
Turn-off Delay Time	$T_{d(off)}$	-	53.6	-		
Fall Time	T_f	-	46	-		

Notes
a. Pulse test：Pulse width ≦ 300 μs, duty cycle ≦ 2%.
b. Guaranteed by design, not subject to production testing.

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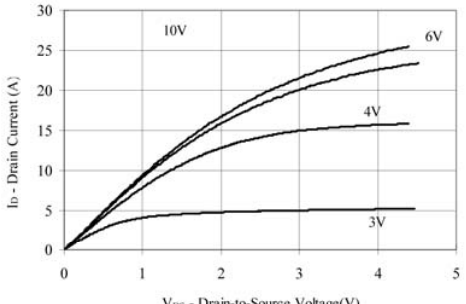
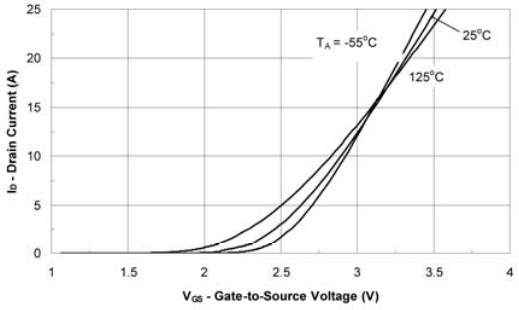
CHARACTERISTIC CURVES



Output Characteristics



Transfer Characteristics

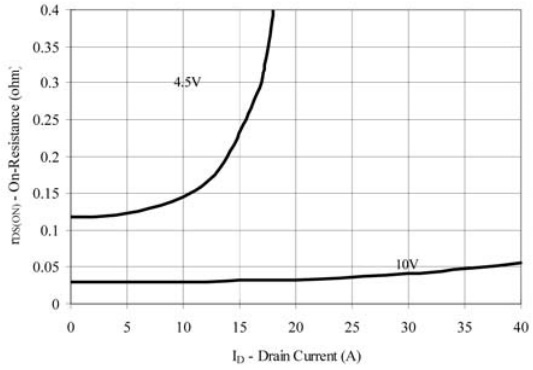
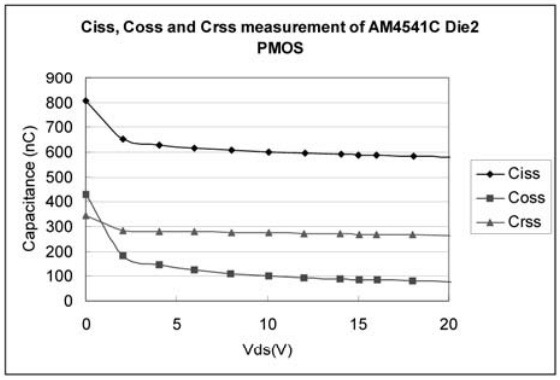
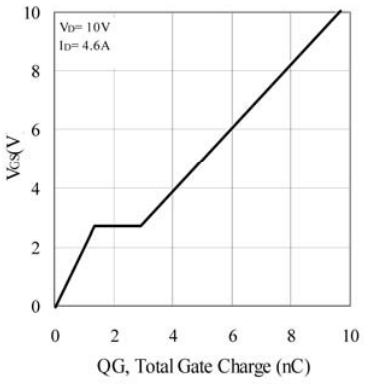


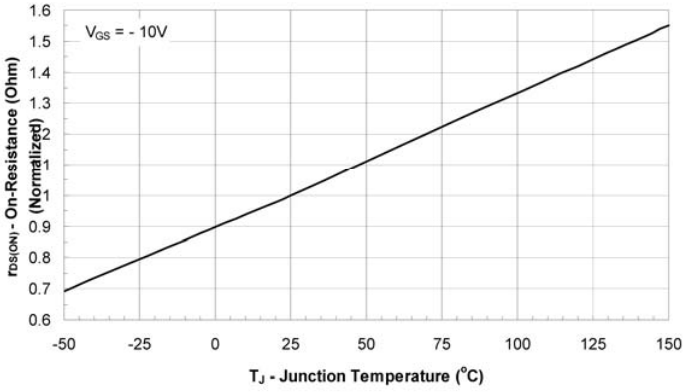
Figure 3. On Resistance Vs Vgs Voltage



Capacitance



Gate Charge



On-Resistance vs. Junction Temperature

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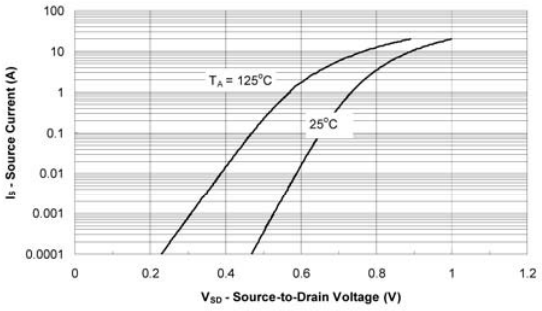
CHARACTERISTIC CURVES



Source-Drain Diode Forward Voltage

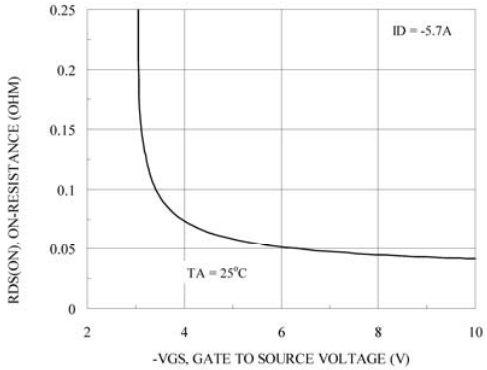
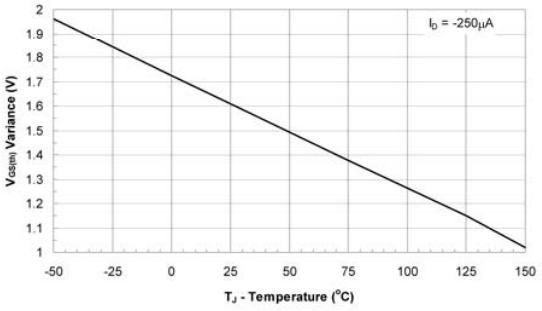


Figure 8. On-Resistance with Gate to Source Voltage



Threshold Voltage

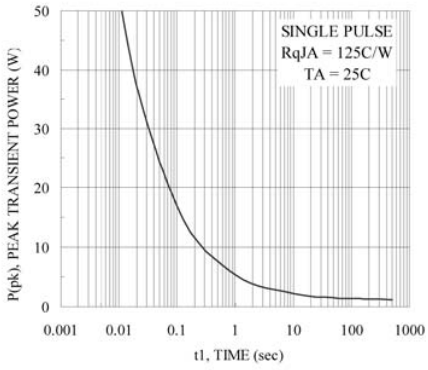


Figure 10. Single Pulse Maximum Power Dissipation

Normalized Thermal Transient Junction to Ambient

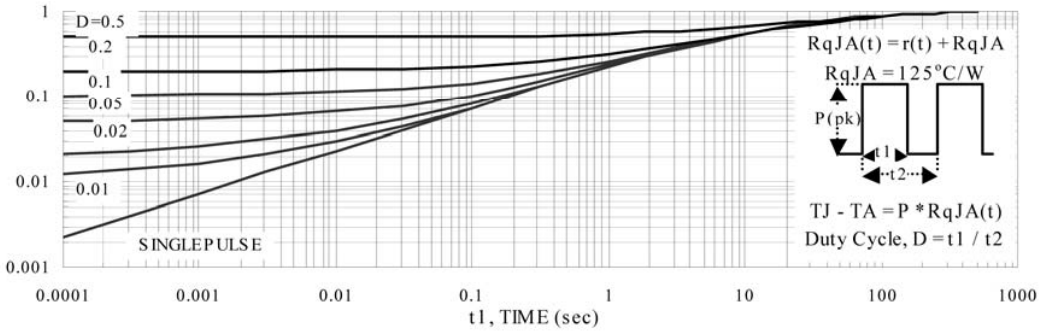


Figure 11. Transient Thermal Response Curve

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