Elektronische Bauelemente

SSD40P04-20DE

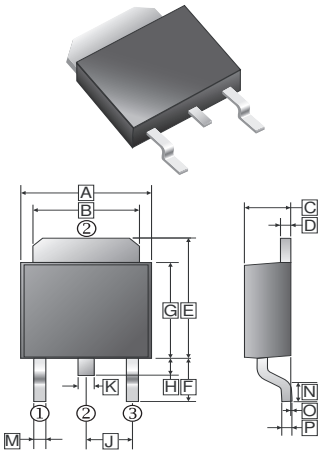
-36A , -40V , $R_{DS(ON)}$ 30mΩ
P-Ch Enhancement Mode Power MOSFET

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.

TO-252(D-Pack)



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	6.35	6.80	J	2.30 REF.	
B	5.20	5.50	K	0.64	0.90
C	2.15	2.40	M	0.50	1.1
D	0.45	0.58	N	0.9	1.65
E	6.8	7.5	O	0	0.15
F	2.40	3.0	P	0.43	0.58
G	5.40	6.25			
H	0.64	1.20			

FEATURES

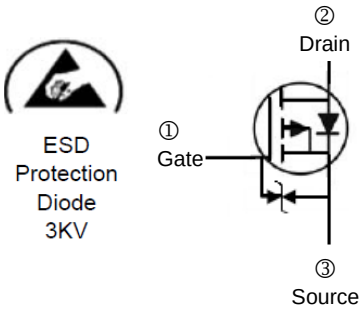
- Low $R_{DS(on)}$ provides higher efficiency and extends battery life.
- Low thermal impedance copper leadframe TO-252 saves board space.
- Fast Switch Speed.
- High performance trench technology.

APPLICATION

DC-DC converters and power management in portable and battery-powered products such as computers, printers, PCMCIA cards, cellular and cordless telephones.

PACKAGE INFORMATION

Package	MPQ	Leader Size
TO-252	2.5K	13 inch



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 [1]	I_D	-36	A
Pulsed Drain Current @T_A=25℃ [2]	I_{DM}	-40	A
Continuous Source Current (Diode Conduction) [1]	I_S	-30	A
Total Power Dissipation @T_A=25℃ [1]	P_D	50	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 ~ 175	℃
Thermal Resistance Ratings			
Maximum Thermal Resistance Junction-Ambient [1]	$R_{\theta JA}$	50	℃ / W
Maximum Thermal Resistance Junction-Case	$R_{\theta JC}$	3	℃ / W

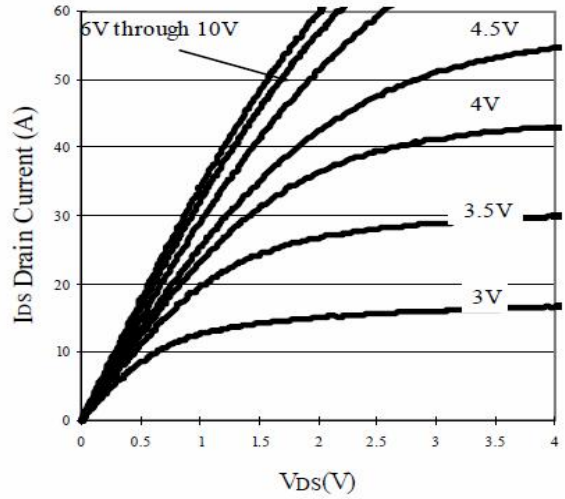
Notes：
1. Surface Mounted on 1" x 1" FR4 Board.
2. Pulse width limited by maximum junction temperature.

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

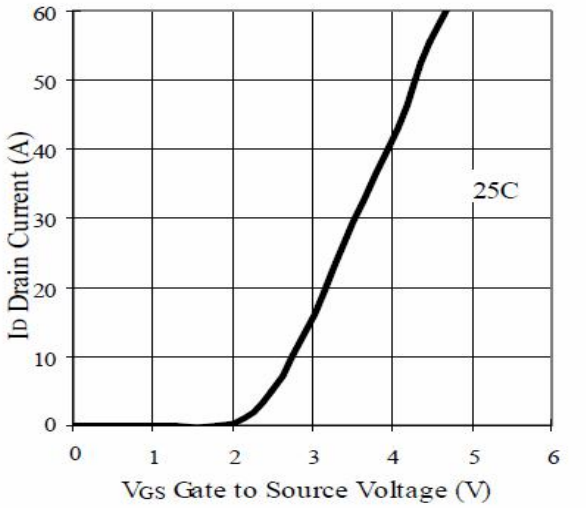
Parameter	Symbol	Min.	Typ.	Max.	Unit	Teat Conditions
Static						
Gate-Threshold Voltage	$V_{GS(th)}$	-1	-	-	V	V_{DS}= V_{GS}, I_D = -250μA
Gate-Body Leakage	I_{GSS}	-	-	±100	nA	V_{DS} =0, V_{GS}= ±25V
Zero Gate Voltage Drain Current	I_{DSS}	-	-	-1	μA	V_{DS}= -24V, V_{GS}=0
		-	-	-5		V_{DS}= -24V, V_{GS}=0, T_J=55℃
On-State Drain Current [1]	$I_{D(on)}$	-41	-	-	A	V_{DS} = -5V, V_{GS}= -10V
Drain-Source On-Resistance [1]	$R_{DS(ON)}$	-	-	30	mΩ	V_{GS}= -10V, I_D= -36A
		-	-	40		V_{GS}= -4.5V, I_D= -29A
Forward Transconductance [1]	g_{fs}	-	31	-	S	V_{DS}= -15V, I_D= -36A
Diode Forward Voltage	V_{SD}	-	-0.7	-	V	I_S= -41A, V_{GS}=0
Dynamic [2]						
Total Gate Charge	Q_g	-	13.9	30	nC	V_{DS}= -15V V_{GS}= -4.5 V I_D= -36A
Gate-Source Charge	Q_{gs}	-	5.2	20		
Gate-Drain Charge	Q_{gd}	-	5.8	20		
Input Capacitance	C_{iss}	-	1583	4000	pF	V_{DS}= -15V, V_{GS}=0, f=1MHz
Output Capacitance	C_{oss}	-	278	600		
Reverse Transfer Capacitance	C_{rss}	-	183	400		
Turn-on Delay Time	$T_{d(on)}$	-	15	-	nS	V_{DD}= -15V I_D= -41A V_{GEN} = -10 V R_L=15Ω R_G=6Ω
Rise Time	T_r	-	12	-		
Turn-off Delay Time	$T_{d(off)}$	-	62	-		
Fall Time	T_f	-	46	-		

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

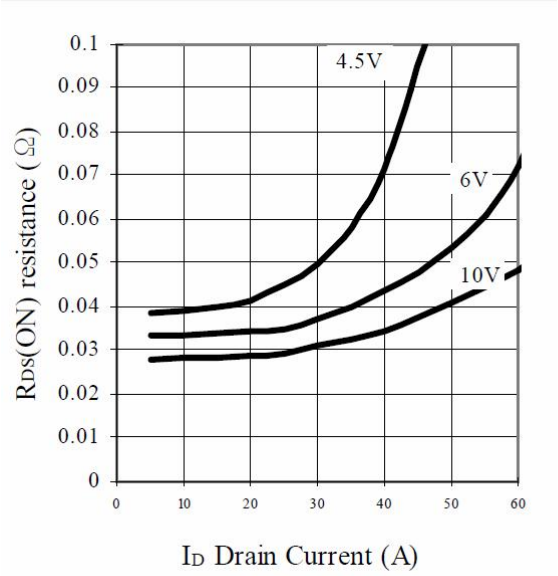
CHARACTERISTIC CURVES



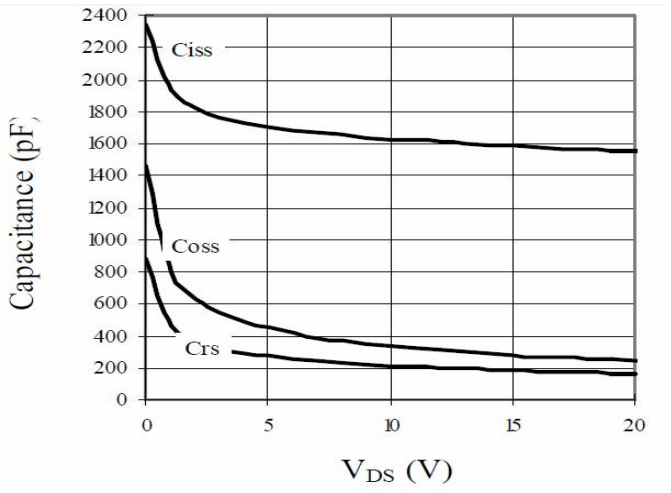
Output Characteristics



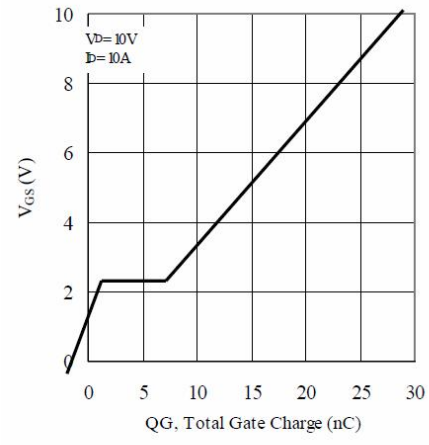
Transfer Characteristics



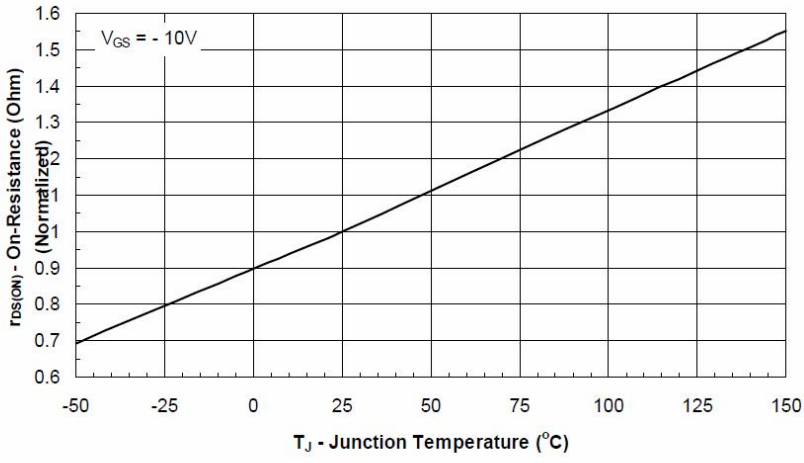
On Resistance Vs Vgs Voltage



Capacitance

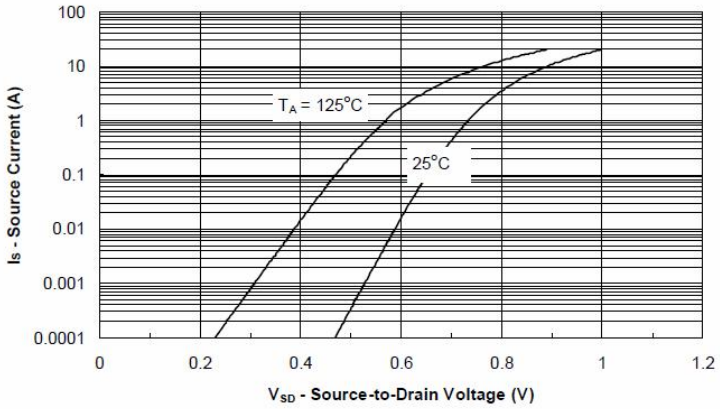


Gate Charge

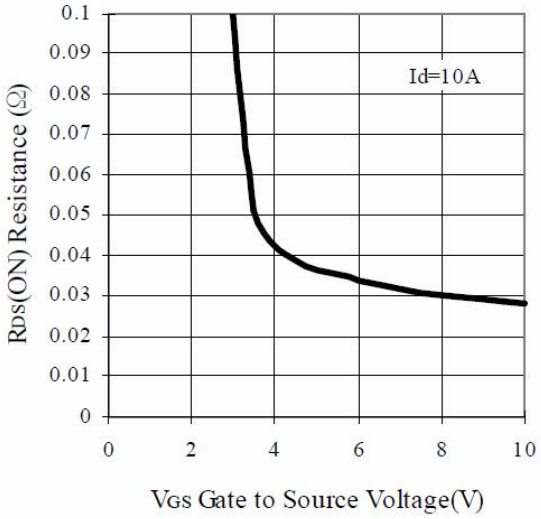


On-Resistance vs. Junction Temperature

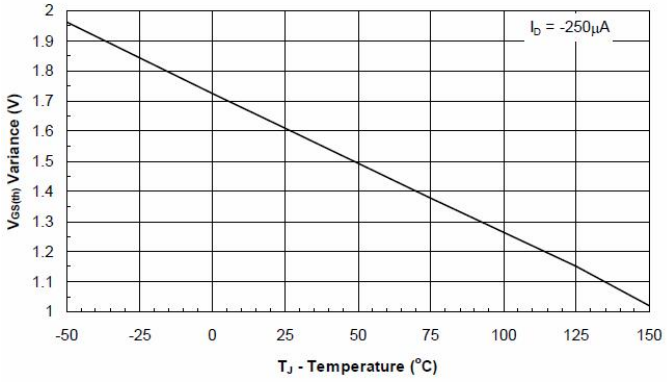
CHARACTERISTIC CURVES



Source-Drain Diode Forward Voltage



On-Resistance with Gate to Source Voltage



Threshold Voltage

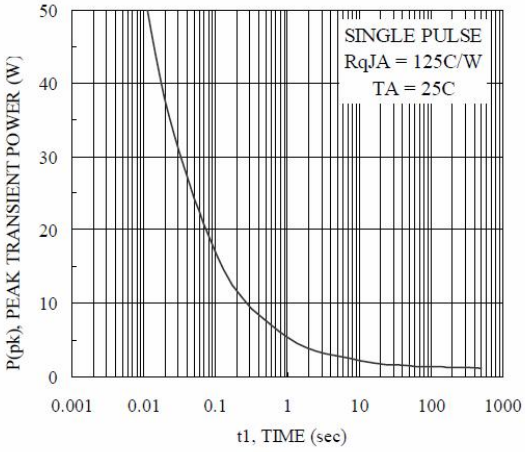


Figure 10. Single Pulse Maximum Power Dissipation

Normalized Thermal Transient Junction to Ambient

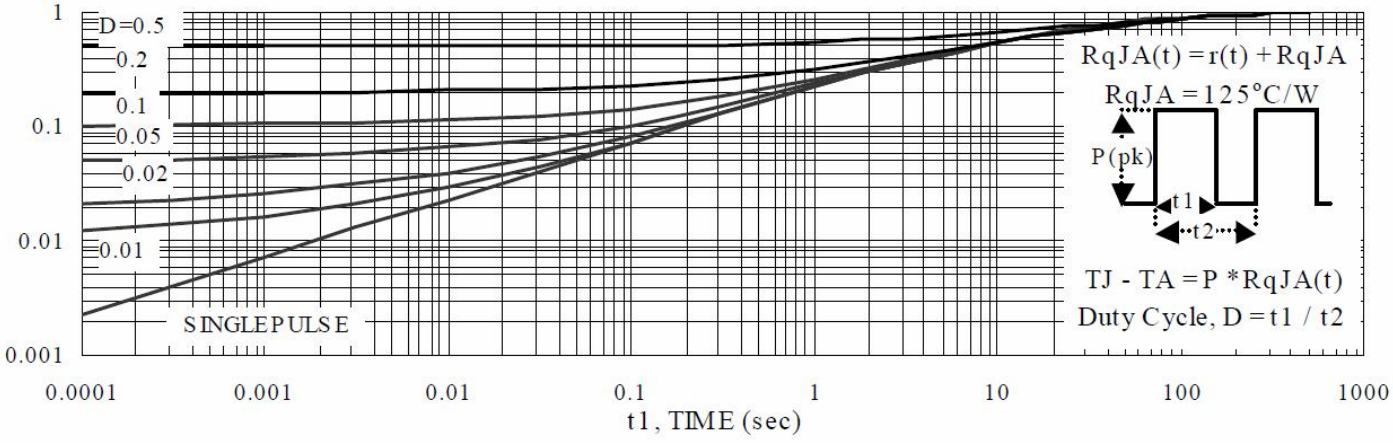


Figure 11. Transient Thermal Response Curve