

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

DESCRIPTION

SSD40P04J uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. This device is well suited for high current load applications.

FEATURES

- High density cell design for ultra low $R_{DS(ON)}$
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high E_{AS}
- Excellent package for good heat dissipation
- Special process technology for high ESD capability

APPLICATIONS

- Power switching applications
- Hard switched and high frequency circuits
- Uninterruptible power supply

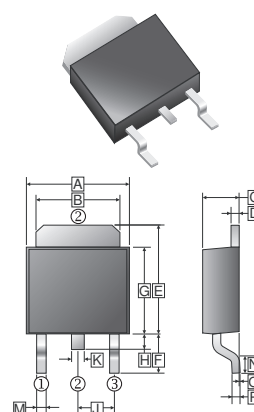
MARKING



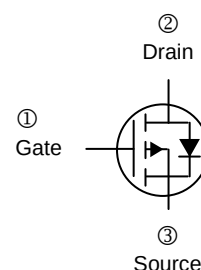
PACKAGE INFORMATION

Package	MPQ	Leader Size
TO-252	2.5K	13 inch

TO-252(D-Pack)



REF.	Min.	Max.	REF.	Min.	Max.
A	6.35	6.90	J	2.336	REF.
B	4.95	5.50	K	0.89	REF.
C	2.10	2.50	M	0.50	1.14
D	0.43	0.9	N	1.3	1.8
E	6.0	7.5	O	0	0.13
F	2.90	REF.	P	0.58	REF.
G	5.40	6.40			
H	0.60	1.20			



ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-40	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	-40	A
Pulsed Drain Current	I_{DM}	-160	A
Single Pulsed Avalanche Energy ¹	E_{AS}	544	mJ
Power Dissipation	P_D	1.25	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	100	$^\circ\text{C} / \text{W}$
Lead Temperature for Soldering Purposes@ 1/8" from case for 10s	T_L	260	$^\circ\text{C}$
Junction and Storage Temperature Range	T_J, T_{STG}	150, -55~150	$^\circ\text{C}$

Notes:

1. E_{AS} condition: $V_{DS}=20\text{V}$, $L=1\text{mH}$, $R_G=25\Omega$, Starting $T_J=25^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	-40	-	-	V	V _{GS} =0, I _D = -250μA
Drain-Source Leakage Current	I _{DSS}	-	-	-1	μA	V _{DS} = -40V, V _{GS} =0
Gate-Source Leakage Current	I _{GSS}	-	-	±100	nA	V _{DS} =0V, V _{GS} = ±20V
On Characteristics ¹						
Gate-Threshold Voltage	V _{GS(th)}	-1.5	-1.85	-3	V	V _{DS} =V _{GS} , I _D = -250μA
Static Drain-Source On-Resistance	R _{DS(ON)}	-	12	14	mΩ	V _{GS} = -10V, I _D = -12A
Forward Transconductance	g _{fs}	34	-	-	S	V _{DS} = -5V, I _D = -12A
Dynamic Characteristics						
Input Capacitance	C _{iss}	-	2960	-	pF	V _{DS} = -20V V _{GS} =0V f=1MHz
Output Capacitance	C _{oss}	-	370	-		
Reverse Transfer Capacitance	C _{rss}	-	310	-		
Switching Characteristics						
Total Gate Charge	Q _g	-	72	-	nC	V _{DS} = -20V V _{GS} = -10V I _D = -12A
Gate-Source Charge	Q _{gs}	-	14	-		
Gate-Drain (“Miller”) Charge	Q _{gd}	-	15	-		
Turn-on Delay Time	T _{d(on)}	-	10	-	nS	V _{DD} = -20V V _{GS} = -10V R _G =3Ω I _D = -20A
Rise Time	T _r	-	18	-		
Turn-off Delay Time	T _{d(off)}	-	38	-		
Fall Time	T _f	-	24	-		
Source-Drain Diode Characteristics						
Drain-Source Diode Forward Voltage ¹	V _{SD}	-	-	-1.2	V	I _S = -20A, V _{GS} =0
Continuous Drain-Source Diode Forward Current ²	I _S	-	-	-40	A	
Pulsed Drain-Source Diode Forward Current	I _{SM}	-	-	-160	A	

Notes:

1. Pulse Test: Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
2. The surface of the device is mounted on a FR4 board, $t \leq 10\text{sec}$.

CHARACTERISTIC CURVE

