

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

DESCRIPTION

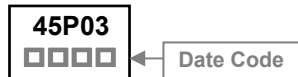
The SSD45P03-C is the highest performance trench P-Ch MOSFETs with extreme high cell density, which provide excellent $R_{DS(ON)}$ and gate charge for most of the synchronous buck converter applications.

The SSD45P03-C meet the RoHS and Green Product With Function reliability approved.

FEATURES

- Advanced High Cell Density Trench Technology
- Super Low Gate Charge
- Green Device Available

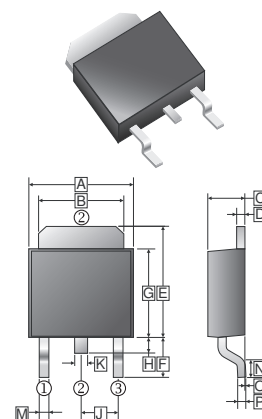
MARKING



PACKAGE INFORMATION

Package	MPQ	Leader Size
TO-252	2.5K	13 inch

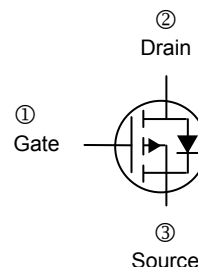
TO-252(D-Pack)



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	6.3	6.9	J	2.3 REF.	
B	4.95	5.53	K	0.89 REF.	
C	2.1	2.5	M	0.45	1.14
D	0.4	0.9	N	1.55 Typ.	
E	6	7.7	O	0	0.15
F	2.90 REF.		P	0.58 REF.	
G	5.4	6.4			
H	0.6	1.2			

ORDER INFORMATION

Part Number	Type
SSD45P03-C	Lead (Pb)-free and Halogen-free



ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V _{DS}	-30	V
Gate-Source Voltage		V _{GS}	±20	V
Continuous Drain Current, @V _{GS} = -10V ¹	T _C =25°C	I _D	-45	A
	T _C =100°C		-30	
	T _A =25°C		-9.6	
	T _A =70°C		-7.7	
Pulsed Drain Current ³		I _{DM}	-150	A
Total Power Dissipation	T _C =25°C	P _D	45	W
Operating Junction and Storage Temperature Range		T _J , T _{STG}	-55~150	°C
Thermal Date				
Thermal Resistance Junction-Case ¹		R _{θJC}	2.8	°C/W
Thermal Resistance Junction-Ambient ¹		R _{θJA}	62.5	
Thermal Resistance Junction-Ambient ²			110	

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

ELECTRICAL CHARACTERISTICS (T _J =25°C unless otherwise specified)							
Parameter		Symbol	Min.	Typ.	Max.	Unit Test conditions	
Drain-Source Breakdown Voltage		BV _{DSS}	-30	-	-	V V _{GS} =0, I _D = -250μA	
Gate Threshold Voltage		V _{GS(th)}	-1	-	-2.5	V V _{DS} =V _{GS} , I _D = -250μA	
Forward Transconductance		g _{fs}	-	30	-	S V _{DS} = -5V, I _D = -30A	
Gate-Source Leakage Current		I _{GSS}	-	-	±100	nA V _{GS} = ±20V	
Drain-Source Leakage Current	T _J =25°C	I _{DSS}	-	-	-1	μA V _{DS} = -24V, V _{GS} =0	
	T _J =55°C		-	-	-5		V _{DS} = -24V, V _{GS} =0
Static Drain-Source On-Resistance ⁴		R _{DS(ON)}	-	-	15	mΩ V _{GS} = -10V, I _D = -30A	
			-	-	25		V _{GS} = -4.5V, I _D = -15A
Total Gate Charge		Q _g	-	22	-	nC I _D = -15A V _{DS} = -15V V _{GS} = -4.5V	
Gate-Source Charge		Q _{gs}	-	8.7	-		
Gate-Drain Charge		Q _{gd}	-	7.2	-		
Turn-on Delay Time		T _{d(on)}	-	8	-	nS V _{DD} = -15V I _D = -15A V _{GS} = -10V R _G =3.3Ω	
Rise Time		T _r	-	73.7	-		
Turn-off Delay Time		T _{d(off)}	-	61.8	-		
Fall Time		T _f	-	24.4	-		
Input Capacitance		C _{iss}	-	2215	-	pF V _{GS} =0 V _{DS} = -15V f=1MHz	
Output Capacitance		C _{oss}	-	310	-		
Reverse Transfer Capacitance		C _{rss}	-	237	-		
Source-Drain Diode							
Continuous Source Current ¹		I _S	-	-	-45	A	
Pulsed Source Current ³		I _{SM}	-	-	-150	A	
Diode Forward Voltage ⁴		V _{SD}	-	-	-1.2	V	I _S = -1A, V _{GS} =0
Reverse Recovery Time		t _{rr}	-	19	-	nS	I _F = -15A, dI/dt=100A/μs
Reverse Recovery Charge		Q _{rr}	-	9	-	nC	T _J =25°C

Notes:

1. Surface mounted on a 1 inch² FR-4 board with 20Z copper.
2. When mounted on Min. Copper pad.
3. Pulse width limited by maximum junction temperature, pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
4. The data tested by pulsed, pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

TYPICAL CHARACTERISTICS CURVE

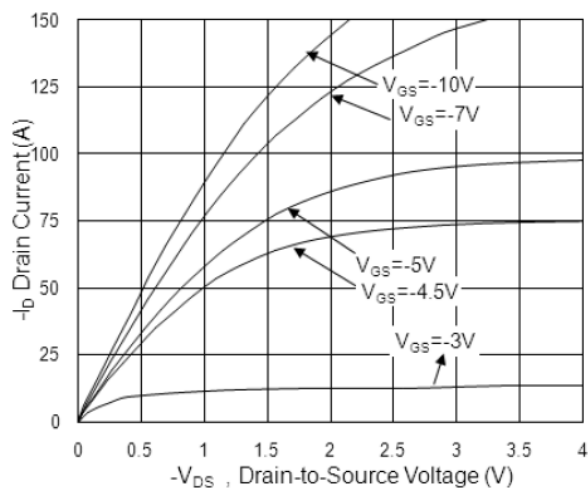


Fig.1 Typical Output Characteristics

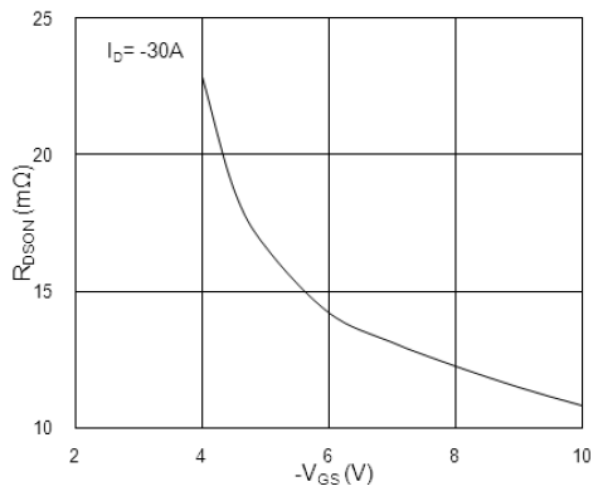


Fig.2 On-Resistance vs. G-S Voltage

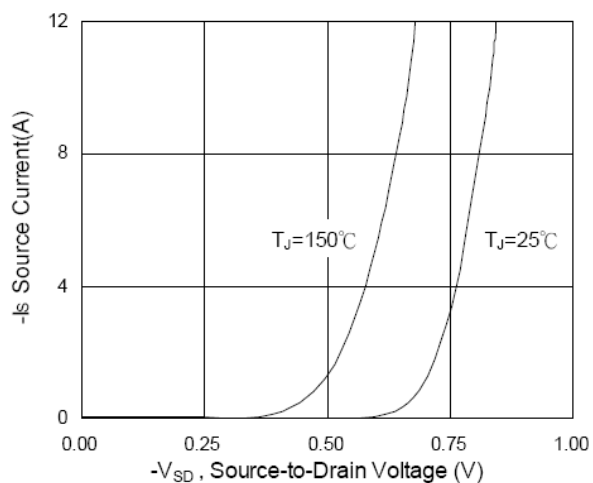


Fig.3 Forward Characteristics of Reverse

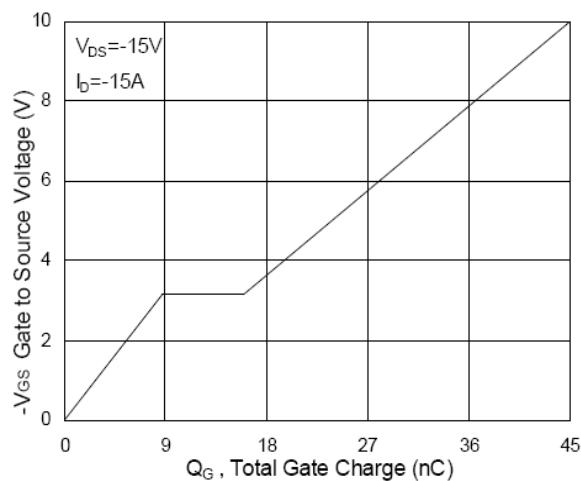


Fig.4 Gate-charge Characteristics

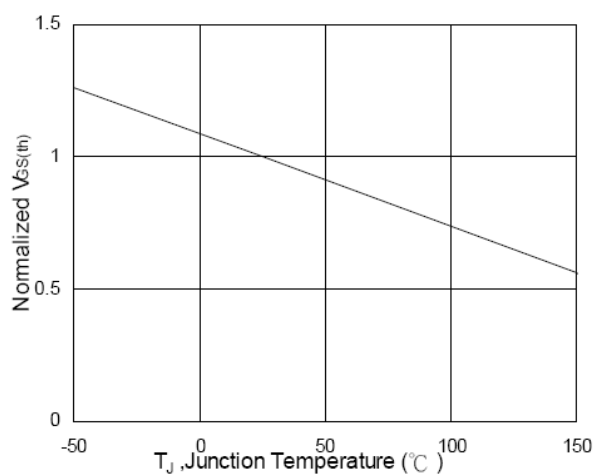


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

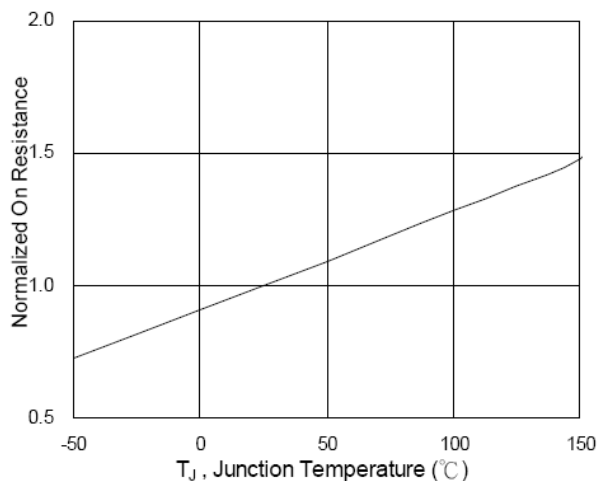


Fig.6 Normalized $R_{DS(ON)}$ vs. T_J

TYPICAL CHARACTERISTICS CURVE

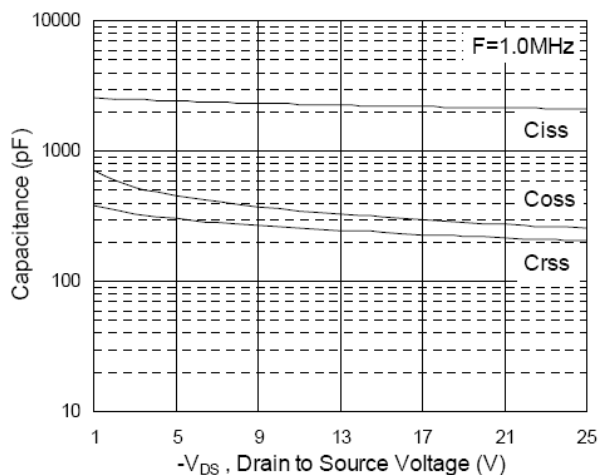


Fig.7 Capacitance

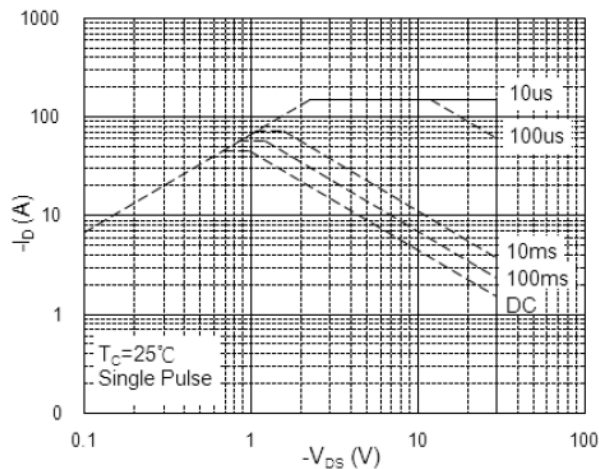


Fig.8 Safe Operating Area

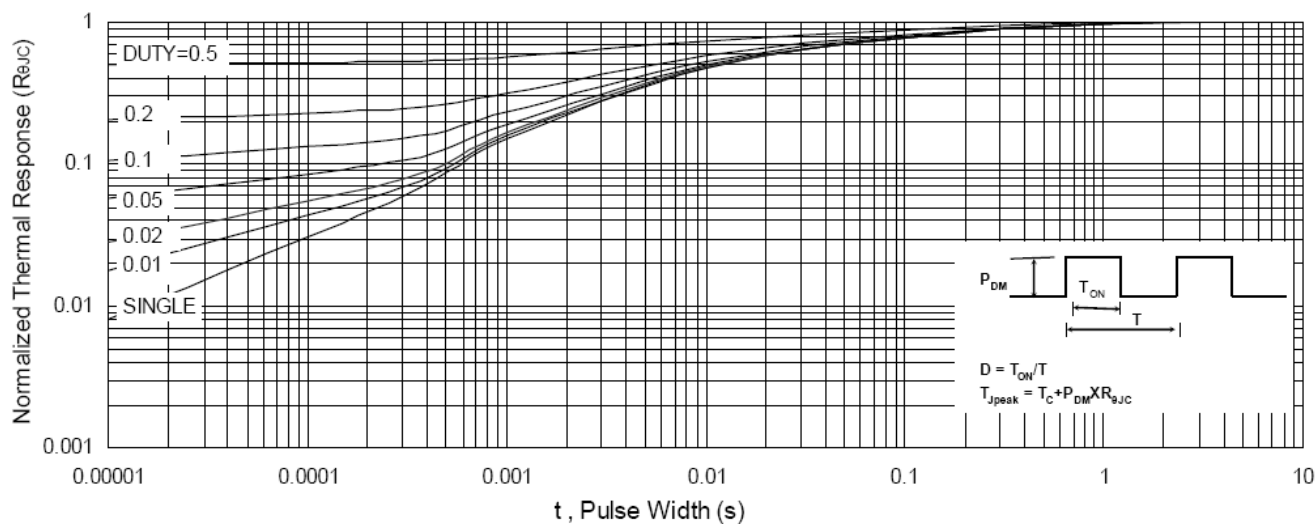


Fig.9 Normalized Maximum Transient Thermal Impedance

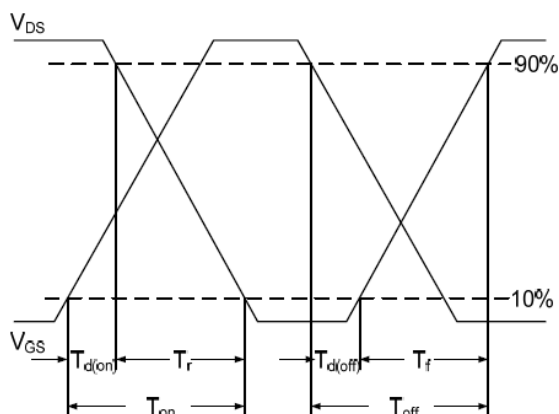


Fig.10 Switching Time Waveform

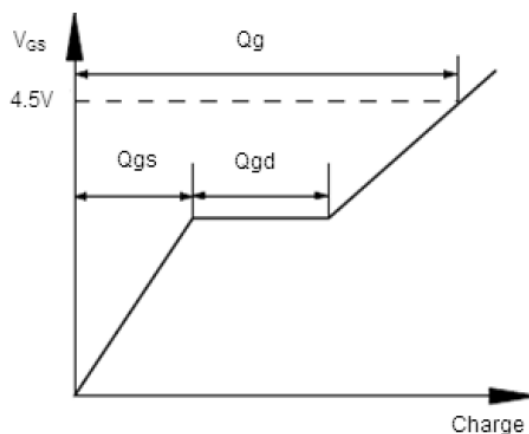


Fig.11 Gate Charge Waveform