Elektronische Bauelemente

SSD3055R-C

30A , 30V , $R_{DS(ON)}$ 18mΩ
N-Ch Enhancement Mode Power MOSFET

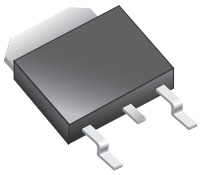
RoHS Compliant Product
A suffix of "-C" specifies halogen free

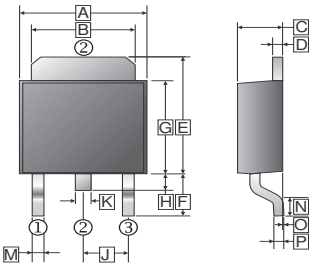
DESCRIPTION

The SSD3055R-C is the highest performance trench N-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 SSD3055R-C meet the RoHS and Green Product requirement with full function reliability approved.

TO-252(D-Pack)

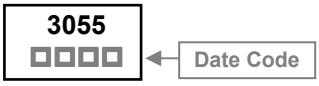


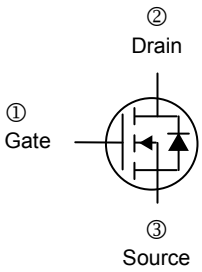


FEATURES

- Advanced High Cell Density Trench Technology
- Super Low Gate Charge
- Excellent CdV/dt Effect Decline
- Green Device Available

MARKING





REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	6.30	6.90	J	2.30 REF.	
B	4.95	5.53	K	0.89 REF.	
C	2.10	2.50	M	0.45	1.14
D	0.40	0.90	N	1.55 TYP.	
E	6.00	7.70	O	0	0.15
F	2.90 REF.		P	0.58 REF.	
G	5.40	6.40			
H	0.60	1.20			

PACKAGE INFORMATION

Package	MPQ	Leader Size
TO-252	2.5K	13 inch

ORDER INFORMATION

Part Number	Type
SSD3055R-C	Lead (Pb)-free and Halogen-free

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

Parameter		Symbol	Rating	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	30	A
	T_C=100°C		18	
	T_A=25°C		8.2	
	T_A=70°C		6.5	
Pulsed Drain Current [2]		I_{DM}	60	A
Total Power Dissipation [3]	T_C=25°C	P_D	25	W
	T_A=25°C		2	
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~150	°C
Thermal Resistance Rating				
Maximum Thermal Resistance Junction-Ambient [1]		$R_{\theta JA}$	Steady State, 62	°C/W
Maximum Thermal Resistance Junction-Case [1]		$R_{\theta JC}$	5	

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

Parameter		Symbol	Min.	Typ.	Max.	Unit	Teat Conditions
Drain-Source Breakdown Voltage		BV_{DSS}	30	-	-	V	V_{GS}=0, I_D=250μA
Breakdown Voltage Temperature Coefficient		$\Delta BV_{DSS}/\Delta T_J$	-	0.023	-	V/°C	Reference to 25°C, I_D=1mA
Gate-Threshold Voltage		$V_{GS(th)}$	1	-	2.5	V	V_{DS}=V_{GS}, I_D=250μA
Forward Transconductance		g_{fs}	-	21.6	-	S	V_{DS}=5V, I_D=15A
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 [2]		$R_{DS(ON)}$	-	15	18	mΩ	V_{GS}=10V, I_D=15A
			-	22	30		V_{GS}=4.5V, I_D=10A
Gate Resistance		R_g	-	2.5	-	Ω	V_{DS}=V_{GS}=0, f=1MHz
Total Gate Charge		Q_g	-	6.2	-	nC	I_D=15A V_{DS}=15V V_{GS}=4.5V
Gate-Source Charge		Q_{gs}	-	2.4	-		
Gate-Drain (“Miller”) Change		Q_{gd}	-	2.5	-		
Turn-on Delay Time [2]		$T_{d(on)}$	-	3	-	nS	V_{DD}=15V I_D=15A V_{GS}=10V R_G=3.3Ω
Rise Time		T_r	-	7.6	-		
Turn-off Delay Time		$T_{d(off)}$	-	21	-		
Fall Time		T_f	-	4	-		
Input Capacitance		C_{iss}	-	572	-	pF	V_{GS}=0 V_{DS}=15V f=1MHz
Output Capacitance		C_{oss}	-	81	-		
Reverse Transfer Capacitance		C_{rss}	-	65	-		
Source-Drain Diode							
Diode Forward Voltage [2]		V_{SD}	-	-	1.2	V	I_S=1A, V_{GS}=0, T_J=25°C
Continuous Source Current [1 4]		I_S	-	-	30	A	V_D=V_G=0, Force Current
Pulsed Source Current [2 4]		I_{SM}	-	-	60		
Reverse Recovery Time		t_{rr}	-	17	-	nS	I_F=15A, dI/dt=100A/μs T_J=25°C
Reverse Recovery Charge		Q_{rr}	-	3	-	nC	

Notes:
1. The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper.
2. The data tested by pulsed , Pulse Width≦300μs, Duty Cycle≦2%.
3. The power dissipation is limited by 150°C junction temperature.
4. The data is theoretically the same as I_D and I_{DM}, in real applications, should be limited by total power dissipation.

CHARACTERISTIC CURVES

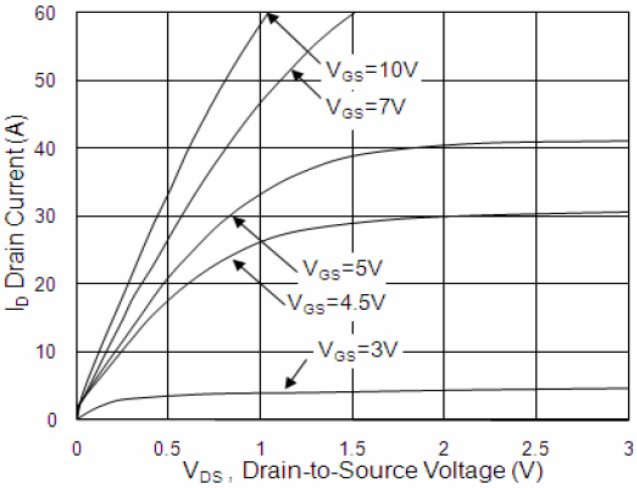


Fig.1 Typical Output Characteristics

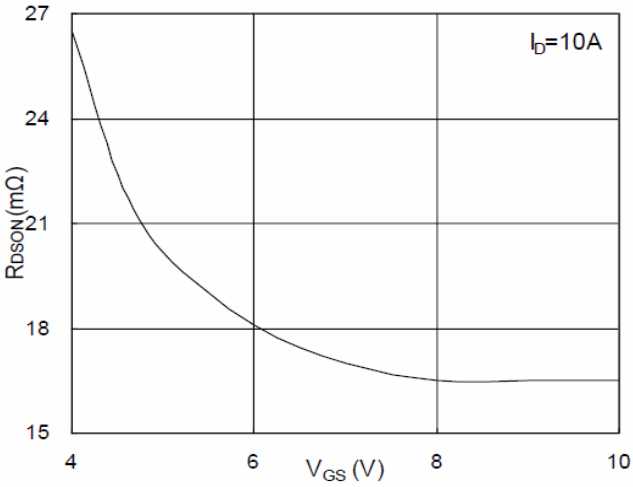


Fig.2 On-Resistance v.s Gate-Source

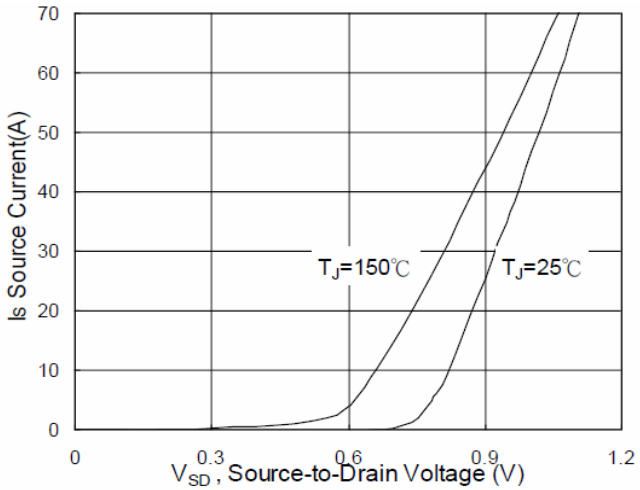


Fig.3 Forward Characteristics Of Reverse

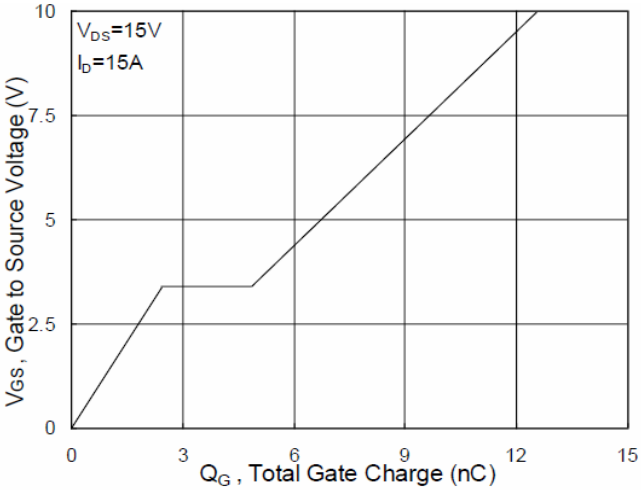


Fig.4 Gate-Charge Characteristics

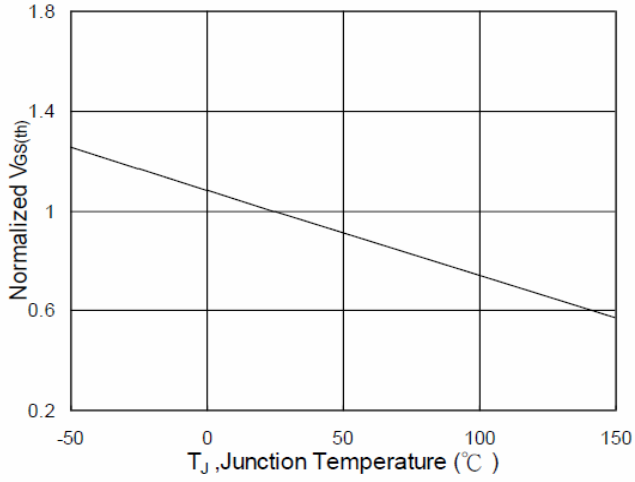


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

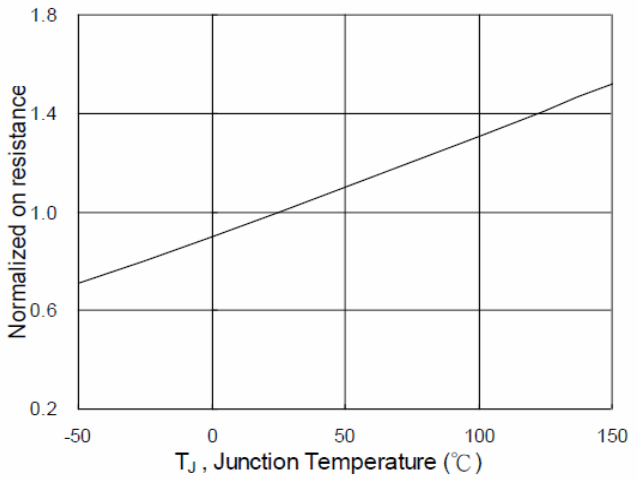


Fig.6 Normalized R_{DSON} v.s T_J

CHARACTERISTIC CURVES

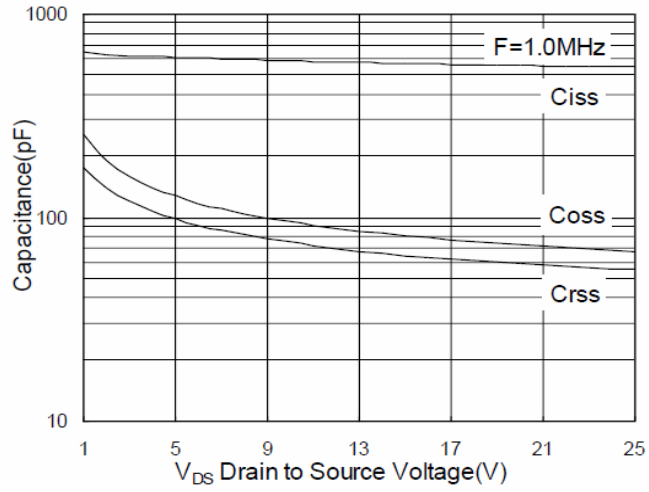


Fig.7 Capacitance

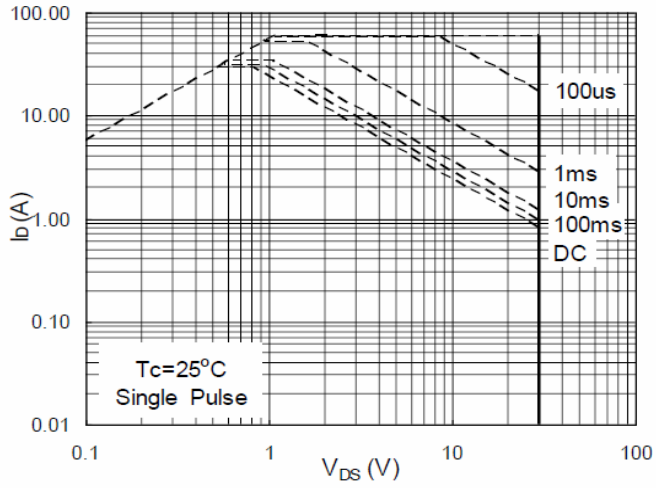


Fig.8 Safe Operating Area

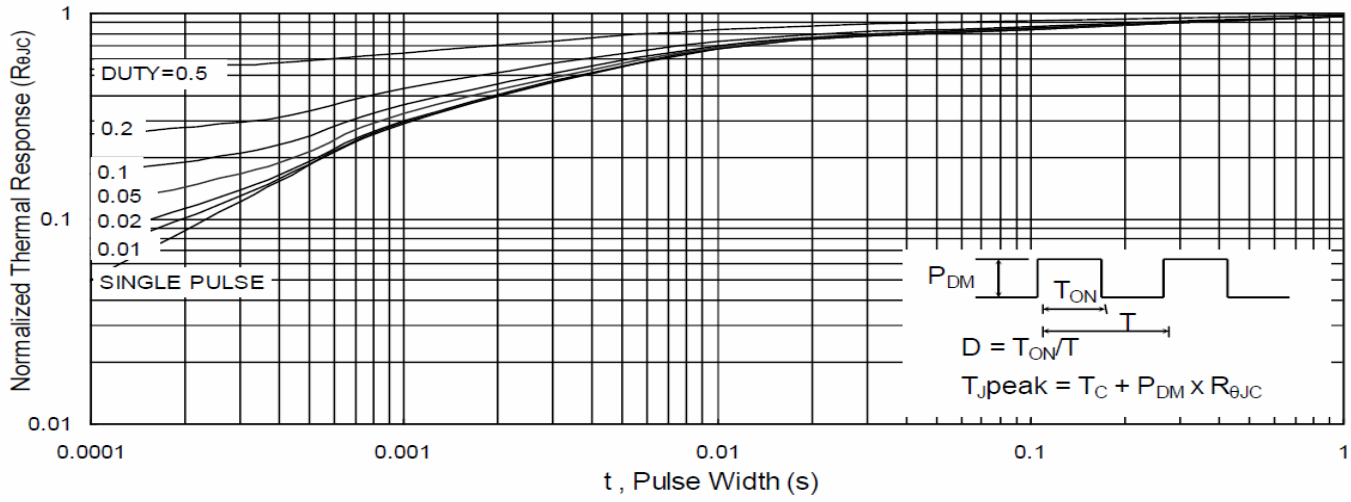


Fig.9 Normalized Maximum Transient Thermal Impedance

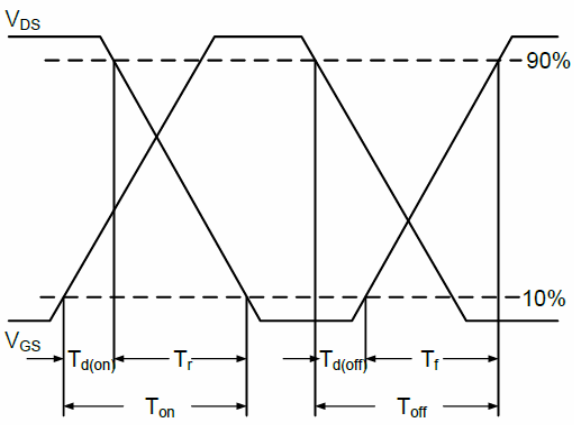


Fig.10 Switching Time Waveform

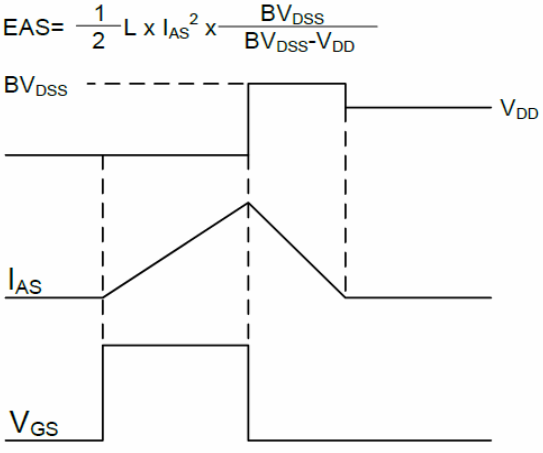


Fig.11 Unclamped Inductive Switching Waveform