

126A, 1200V N-CHANNEL SILICON CARBIDE PLANAR ENHANCEMENT POWER MOSFET

DESCRIPTION

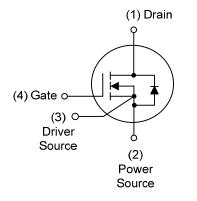
SiC The material can achieve high voltage with most carrier devices (MOSFET) with fast device structure characteristics, so it can realize the three characteristics of "high voltage", "low on resistance" and "high frequency" at the same time.

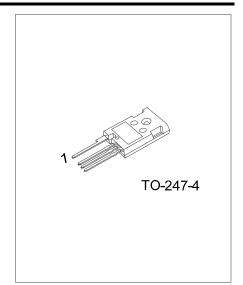
It is widely used in electric vehicle charger, industrial equipment power supply, efficient power regulator inverter and rectification part and other uses.

FEATURES

- * $R_{DS(ON)} \le 18 \text{ m}\Omega @ V_{GS}=18V, I_D=80A$
- * High Blocking Voltage
- * High Frequency Operation
- * Low on-resistance
- * Fast intrinsic diode with low reverse recovery
- * 100% avalanche tested

SYMBOL



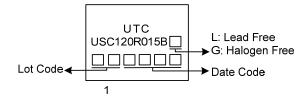


Power MOSFET

ORDERING INFORMATION

Ordering Number		Dookogo	Pin Assignment				Deaking	
Lead Free	Halogen Free	Package	1	2	3	4	Packing	
USC120R015BL-T474-T	USC120R015BG-T474-T	TO-247-4	D	S	S S G		Tube	
Note: Pin Assignment: D: Drain S: Source G: Gate								
USC120R015BG-T474-	 (1) T: Tube (2) T474: TO-247-4 (3) G: Halogen Free and Lead Free, L: Lead Free 							

MARKING





■ ABSOLUTE MAXIMUM RATINGS (Tc=25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT	
Drain-Source Voltage		V _{DSS}	1200	V	
Gate-Source Voltage	Dynamic	Dynamic Static		-10 / +23	V
	Static			-4 / +18	V
Drain Current	Cartinuaua	V _{GS} =18A T _C =25°C	ID	126	А
	Continuous	V _{GS} =18A T _C =100°C		90	А
	Pulsed (Note	Pulsed (Note 2)		340	Α
Power Dissipation		PD	484	W	
Junction Temperature		TJ	-55 ~ +175	°C	
Storage Temperature		T _{STG}	-55 ~ +175	°C	

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2. Repetitive Rating: Pulse width limited by maximum junction temperature.

THERMAL DATA

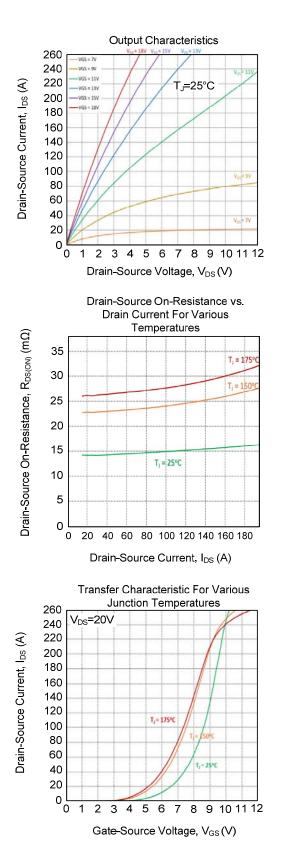
PARAMETER	SYMBOL	RATINGS	UNIT	
Junction to Ambient	θ _{JA}	50	°C/W	
Junction to Case	θις	0.31	°C/W	

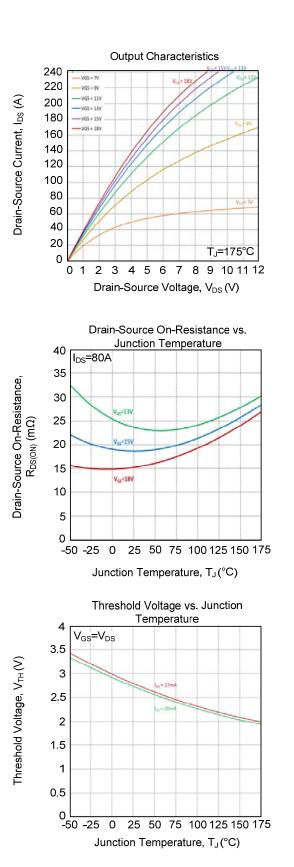
■ ELECTRICAL CHARACTERISTICS (TJ=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
OFF CHARACTERISTICS		•					
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =100μΑ, V _{GS} =0V	1200			V	
Drain-Source Leakage Current	IDSS	V _{DS} =1200V, V _{GS} =0V	0	1	50	μA	
Cate Source Lookage Current Forward	lgss	V _{GS} =+18V, V _{DS} =0V	0	1	200	nA	
Gate- Source Leakage Current Reverse		V _{GS} =-4.0V, V _{DS} =0V	-200	-1	0	nA	
ON CHARACTERISTICS							
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =20µA	2.0	2.8	3.7	V	
Static Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =18V, I _D =80A		15	18	mΩ	
Transconductance	g fs	V _{DS} =20V, I _D =80A		58		S	
DYNAMIC PARAMETERS			_				
Input Capacitance	CISS			4300		рF	
Output Capacitance	Coss	V _{DS} =1000V, V _{GS} =0V, f=100KHz		214		рF	
Reverse Transfer Capacitance	C _{RSS}	$v_{\rm DS}$ = 1000 v, $v_{\rm GS}$ = 0 v, 1 = 100 kHz		19		рF	
C _{OSS} Stored Energy	Eoss			122		μJ	
SWITCHING PARAMETERS			_				
Total Gate Charge	Q _G	(1 - 800)(1)(-4)(1 + 18)(-4)(1 + 18)(-4)(1 + 18)(-4)(-4)(1 + 18)(-4)(-4)(-4)(-4)(-4)(-4)(-4)(-4)(-4)(-4		222		nC	
Gate to Source Charge	Q _{GS}	V _{DS} =800V, V _{GS} =-4V / +18V, I _D =80A		55		nC	
Gate to Drain Charge	Q _{GD}	ID-00A		88		nC	
Internal Gate Input Resistance	R _{G(ING)}	I _D =0A, f=1MHz		1.4		Ω	
SOURCE- DRAIN DIODE RATINGS AND	CHARACTE	ERISTICS	_				
Drain-Source Diode Forward Voltage	V _{SD}	V _{GS} =-4.0A, I _{SD} =40A	4.1			V	
Continuous Diode Forward Current	ls	V _{GS} =-4.0V			97	А	
Body Diode Reverse Recovery Time	trr	(21		ns	
Body Diode Reverse Recovery Charge	Qrr	V _{GS} =-4.0V, I _{SD} =80A, V _R =800V, d _{IF} /dt=4200A/µs		470		nC	
Peak Reverse Recovery Current	I _{RRM}	uμ/ut=4200A/μs		40		А	



TYPICAL CHARACTERISTICS

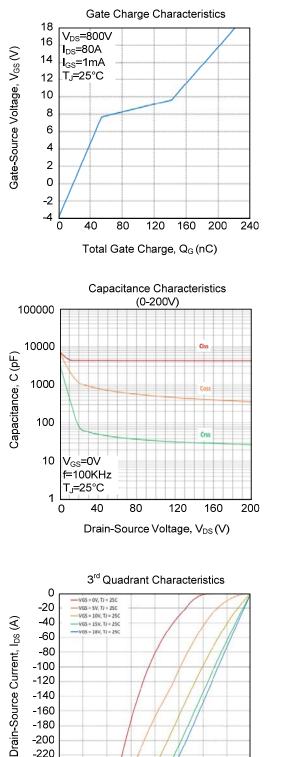




Capacitance Characteristics

(0-1200V)

TYPICAL CHARACTERISTICS (Cont.)



100000 10000 Capacitance, C (pF) 1000 100 10 V_{GS}=0V f=100KHz TJ=25°C 1 200 400 600 800 1000 1200 0 Drain-Source Voltage, V_{DS} (V) Output Capacitor Stored Energy 200 160 Stored Energy (µJ) 120 80 40 0 200 400 600 800 1000 1200 0 Drain-Source Voltage, V_{DS} (V) 3rd Quadrant Characteristics 0 -VG5 = 0V, TJ = 1750 -20 -VGS = 5V, TJ = 175C -VGS = 10V, TJ = 175C -40 Drain-Source Current, I_{DS} (A) -VGS = 15V, TJ = 1750 -60 VGS = 18V, TJ = 1750 -80 -100 -120 -140 -160 -180 -200 -220 -240 T_J=175°C -260 -7 -6 -5 -4 -3 -2 -1 -8 0

Drain-Source Voltage, V_{DS} (V)

-4 Drain-Source Voltage, VDS (V)



-100

-120

-140

-160

-180 -200

-220

-240

-260

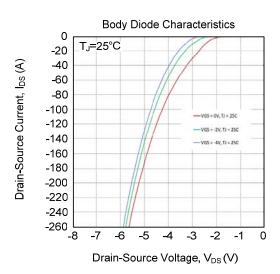
-8

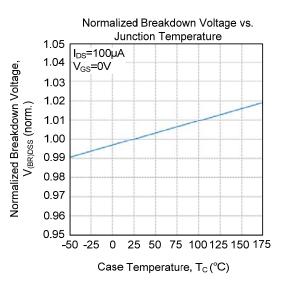
-7 -6 -5 -3 -2 -1

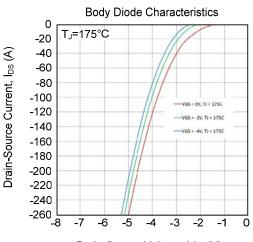
TJ=25°C

0

■ TYPICAL CHARACTERISTICS (Cont.)







Drain-Source Voltage, V_{DS}(V)

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