Descriptions

This is N-Ch SiC Power MOSFET in a TO-247 Plastic Package.

Features

- VDS=1200V
- ID=60A（Tc=25℃）
- RDS=30mΩ（VGS=18V,TJ=25℃）
- Low On-Resistance with High Blocking Voltage
- High Speed Switching with Low Capacitance
- Avalanche Ruggedness
- Halogen Free, Rohs Compliant

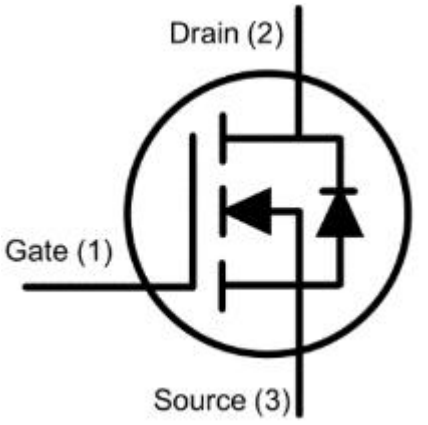
Applications

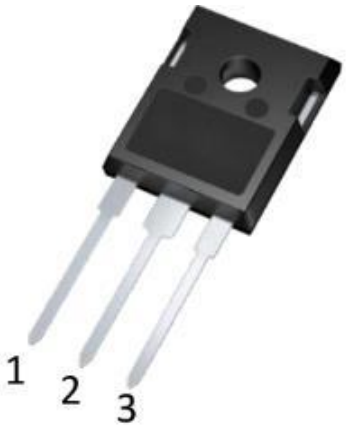
- Switch Mode Power Supplies (SMPS)
- Pulsed Power applications
- Motor Drivers & Battery Chargers
- High Voltage DC/DC Converter

Benefits

- High Switching Frequency Operation
- High System Efficiency
- Increased Power Density
- Reduction of Heat Sink Requirements

Schematic & PIN Configuration





Maximum Rated Valued of MOSFET

Drain-source voltage	V_{DSS}		1200	V
Recommend Gate-Source Voltage	V_{GSop}		-5/18	V
Gate-Source Voltage	V_{GSmax}		-8/20	V
Continuous drain current	I_D	Tc=100℃, V_{GS}=20V Tc=25℃, V_{GS}=20V	40 60	A
Pulsed drain current	I_{DM}	t_{Pulse} limited by Tjmax	100	A
Maximum power dissipation	P_{tot}	Tc=25℃, T_J =175℃	312	W
Operating Junction Temperature	Tj		-55~175	℃
Storage Temperature	T_{stg}		-55~175	℃

Thermal Characteristic

Thermal resistance, junction-to-case	$R_{\theta JC}$		0.48	℃/W
Thermal resistance, junction-to-ambient	$R_{\theta JA}$		42	℃/W

Electrical Characteristics of MOSFET

Drain-Source breakdown voltage	V(BR)DSS	ID=100uA, VGS=0V	TJ=25℃	1200	-	-	V
Gate threshold voltage	VGS(th)	ID=10mA, VDS=VGS	TJ=25℃	2.0	3.2	4.0	V
Zero gate voltage drain current	IDSS	VDS=1200V, VGS=0V	TJ=25℃	-	1	100	uA
Gate-Source leakage current	IGSS	VDS=0V, VGS=20V	TJ=25℃	-	-	200	nA
Drain-Source On-State resistance	RDS(ON)	VGS=18V, ID=33A	TJ=25℃	-	30	50	mΩ
			TJ=150℃	-	42	-	mΩ
		VGS=15V, ID=33A	TJ=25℃	-	37	-	mΩ
			TJ=150℃	-	45	-	mΩ
Transconductance	Gfs	VDS=20V, ID=33A	TJ=25℃	-	20	-	S
Internal gate resistor	RGint	f=1MHz, VAC=30mV	TJ=25℃	-	1.9	-	Ω
Input capacitance	Ciss	f=1MHz, VDS=1000V, VAC=30mV, VGS=0V	TJ=25℃	-	3400	-	pF
Output capacitance	Coss			-	133	-	pF
Reverse transfer capacitance	Crss			-	18.0	-	pF
Gate to source charge	QGS	VDS=800V IDS=33A VGS= -5V/18V	TJ=25℃	-	40	-	nC
Gate to drain charge	QGD			-	37	-	nC
Total gate charge	QG			-	128	-	nC
Turn-on delay time	td on	VDS=800V, IDS=33A, RG-ext=5Ω, VGS=-5V/18V,	TJ=25℃	-	60	-	ns
Rise time	tr		TJ=25℃	-	140	-	ns
Turn-off delay time	td off		TJ=25℃	-	50	-	ns
Fall time	tf		TJ=25℃	-	42	-	ns
Turn-on energy loss per pulse	Eon		TJ=150℃	-	1100	-	uJ
Turn-off energy loss per pulse	Eoff		TJ=150℃	-	410	-	uJ

Characteristics of Body Diode

Forward voltage	V_{SD}	I_{SD}=20A, V_{GS}=-5V	T_J=25℃	-	3.6		V
Continuous diode forward current	Is	V_{GS}=0V	T_J=25℃	-	60	-	A
Peak reverse recovery current	I_{RM}	V_{DS}=800V, I_{SD}=33A, V_{GS}=-5V -di/dt=1200A/us	T_J=150℃	-	15	-	A
Reverse recovery time	t_{rr}		T_J=150℃	-	35	-	ns
Recovery charge	Q_{rr}		T_J=150℃	-	165	-	nC

Typical Characteristics

Fig.1 Typical Forward Output Characteristics at T_J=25°C

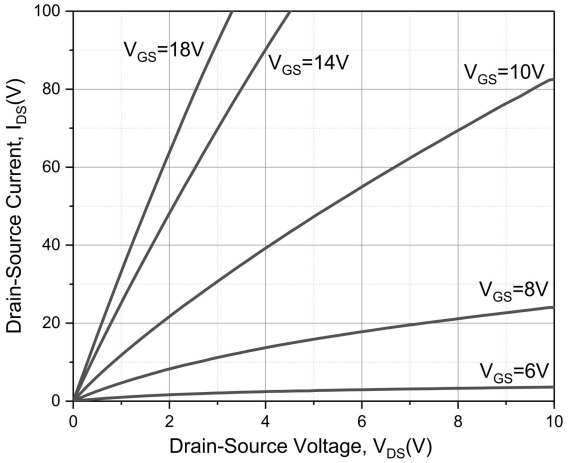


Fig.2 Typical Forward Output Characteristics at T_J =150 ℃

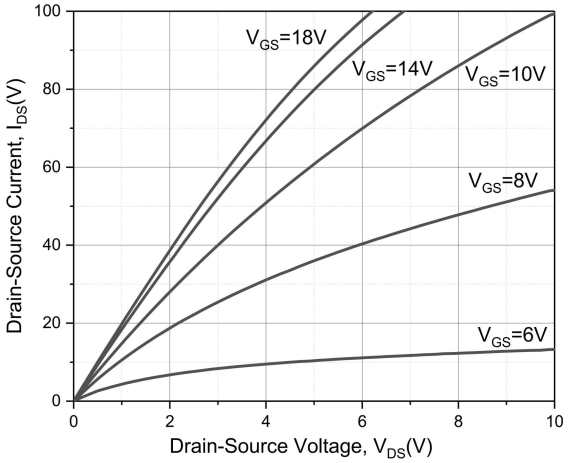


Fig.3 On-Resistance For Various Gate Voltage

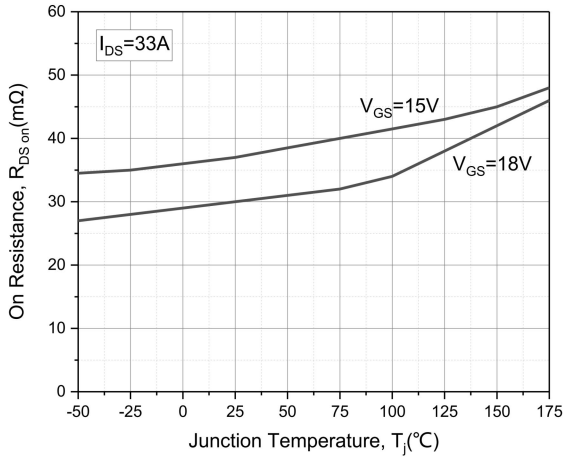


Fig.4 Transfer Characteristic for Various Junction Temperatures

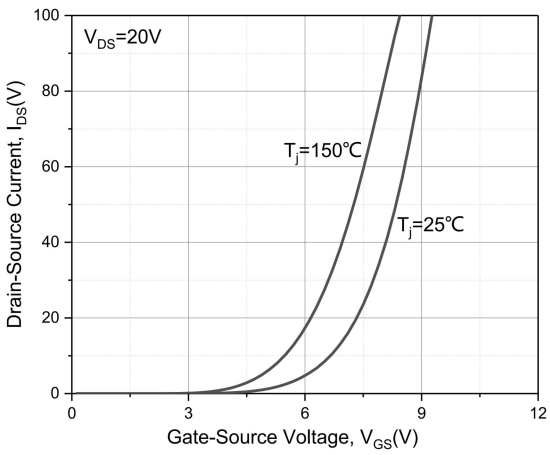


Fig.5 Threshold Voltage vs. Temperature

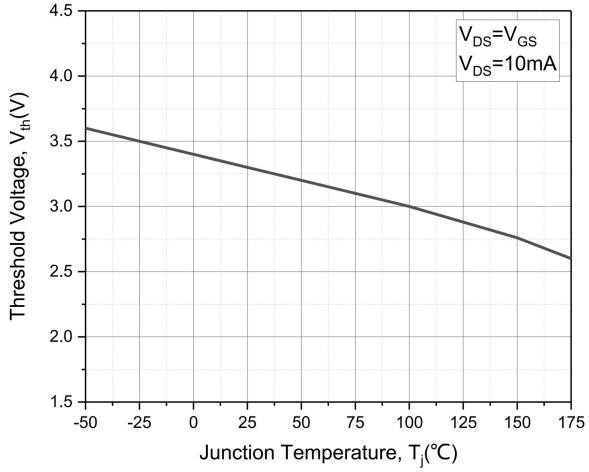
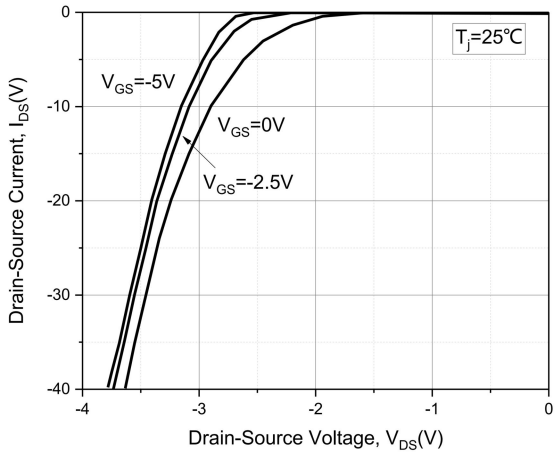


Fig.6 Body Diode Characteristics at T_J =25 ℃



Typical Characteristics

Fig.7 Body Diode Characteristics at T_J =150 ℃

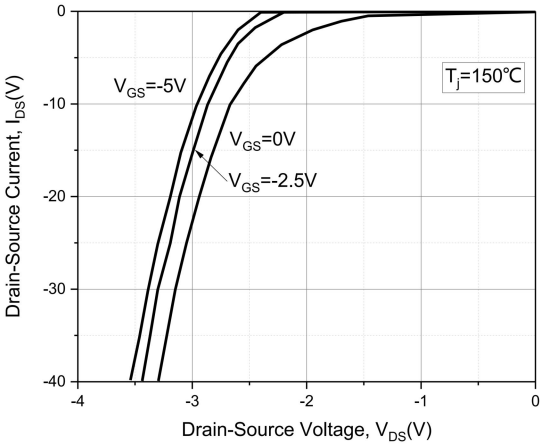


Fig.8 Capacitance vs. Drain-Source Voltage (0 - 1200V)

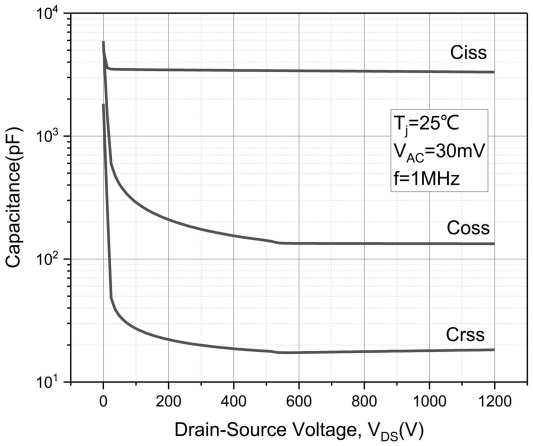


Fig.9 Gate Charge Characteristics

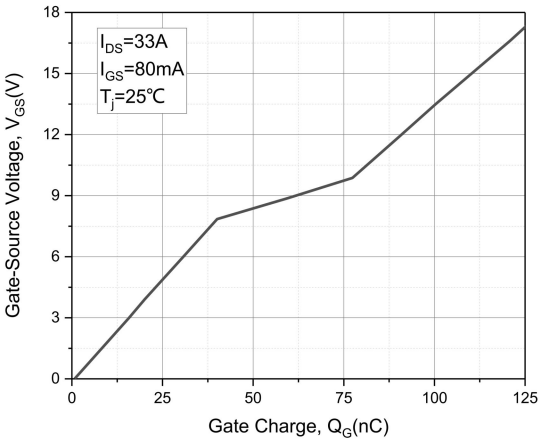


Fig.10 Maximum Power Dissipation Derating vs. Case Temperature

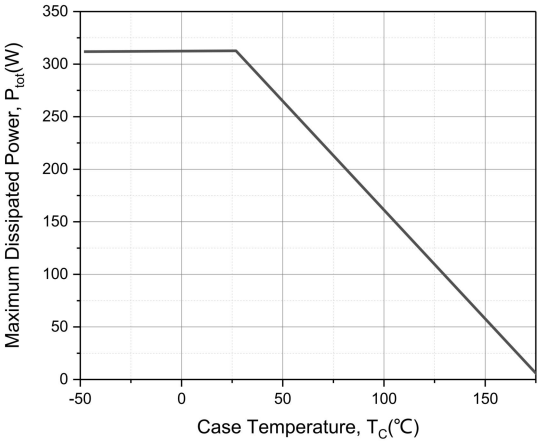


Fig.11 Maximum Safe Operating Area

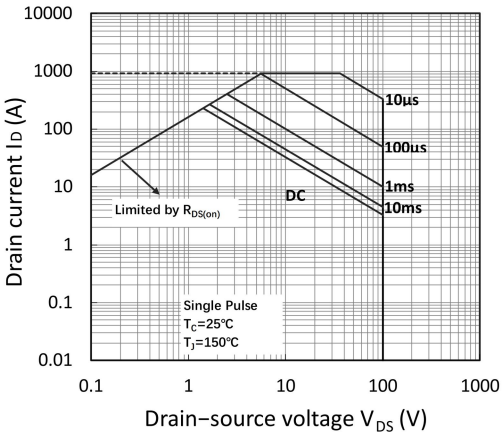
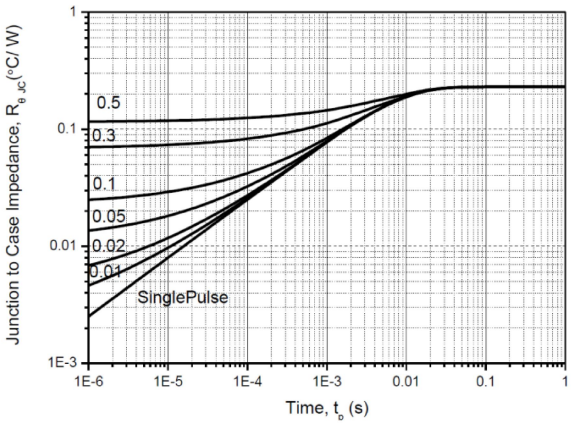


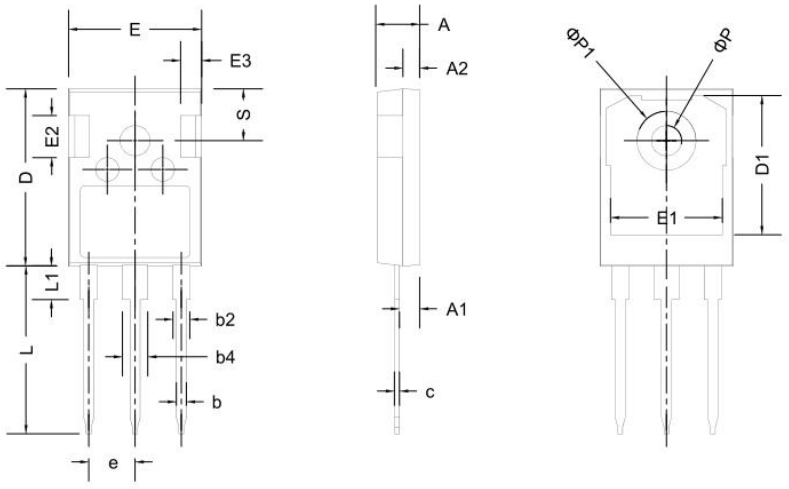
Fig.12 Transient Thermal Impedance (Junction – Case)



Ordering Information

Part	Package	Marking	Packing method
CTCM032J120T2C	TO-247	32J120T2C	Tube

Package Information



SYMBOL	mm		
	MIN	NOM	MAX
A	4.80	5.00	5.20
A1	2.21	2.41	2.59
A2	1.85	2.00	2.15
b	1.11	1.21	1.36
b2	1.91	2.01	2.21
b4	2.91	3.01	3.21
c	0.51	0.61	0.75
D	20.80	21.00	21.30
D1	16.25	16.55	16.85
E	15.50	15.80	16.10
E1	13.00	13.30	13.60
E2	4.80	5.00	5.20
E3	2.30	2.50	2.70
e		5.44 BSC	
L	19.62	19.92	20.22
L1	-	-	4.30
ϕ P	3.40	3.60	3.80
ϕ P1	-	-	7.30
S		6.16 BSC	