/ Descriptions

TO-220F SiC N MOS

SiC N-CHANNEL MOSFET in a TO-220F Plastic Package.

/ Features

V_{DS}=800V I_D=15.4A

$R_{DS(on)}$@15V≤280mΩ(Type.215mΩ)

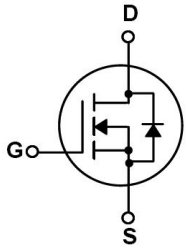
$R_{DS(on)}$@18V≤260mΩ(Type.176mΩ)

/ Applications

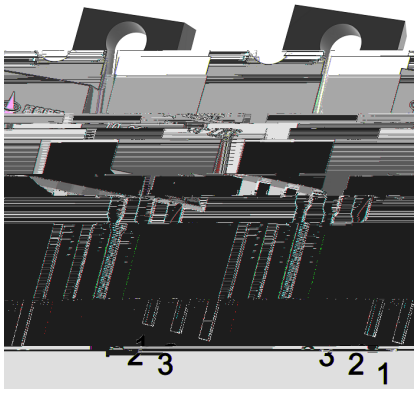
LED PD PC

LED driver, PD charger, PC adapter, Air-conditioning, E-bike charger.

/ Equivalent Circuit



/ Pinning



PIN1 G PIN 2 D PIN 3 S

/ Marking

See Marking Instructions.

/ Absolute Maximum Ratings(Tc=25)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DSS}	800	V
Continuous DC Drain Current for $R_{th(j-c,typ.)}$, Limited by $T_{VJ(max)}$	I_D(Tc=25)	15.4	A
	I_D(Tc=100)	10.9	A
Peak Drain Current, tp Limited by $T_{VJ(max)}$	I_{DM}	24.5	A
Gate-Source Max Voltage	$V_{GS,max}$	-10/+22	V
Gate-Source Operate Voltage	$V_{GS,op}$	0/+15	V
Single Pulse Avalanche Energy	E_{AS}	23	mJ
Power Dissipation or $R_{th(j-c,typ.)}$	P_D(Tc=25)	33	W
Operating and Storage Temperature Range	T_{VJ},T_{STG}	-55 to 175	
MOSFET/Body Diode Junction-Case Thermal Resistance	$R_{th(j-c)}$	4.5	/W

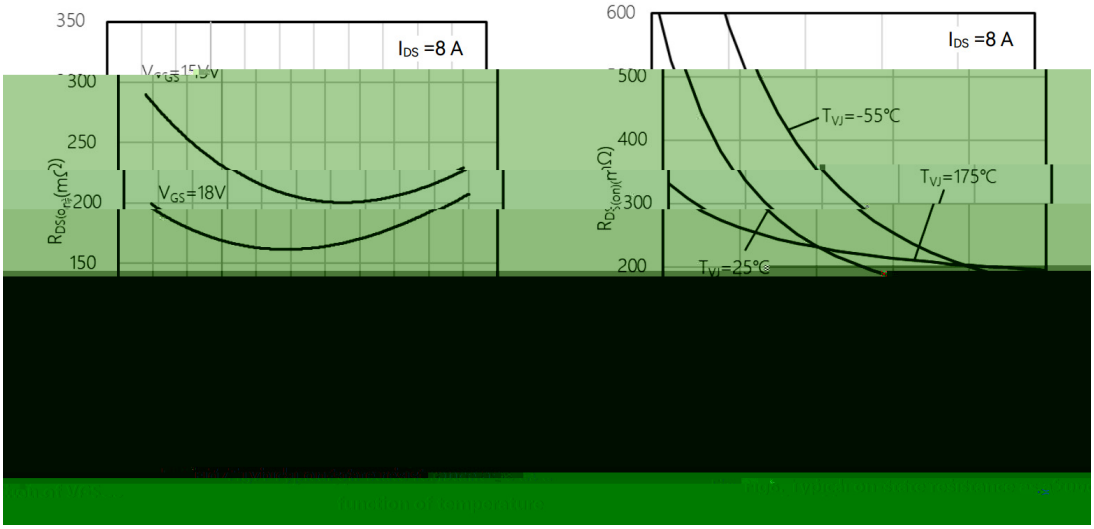
/ Electrical Characteristics(Tc=25)

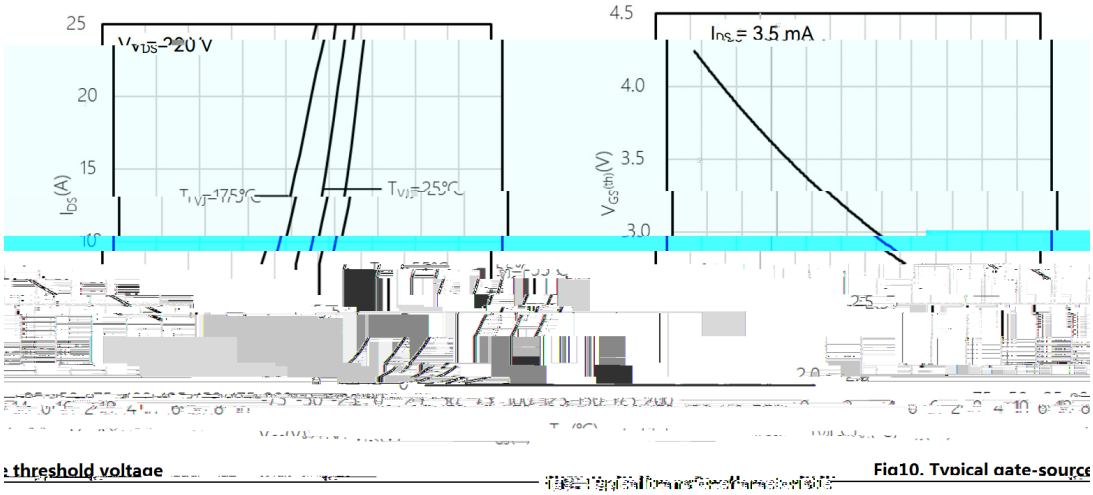
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=1mA	800			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} I_D=3.5mA	2.7	3.4	4.1	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=800V V_{GS}=0V		0.1	20	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=22V V_{DS}=0V			250	nA
Source-Gate Leakage Current	I_{SGS}	V_{GS}=-10V V_{DS}=0V			250	nA
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS}=15V I_D=8A		215	280	mΩ
		V_{GS}=15V I_D=8A T_{VJ}=175		229		
		V_{GS}=18V I_D=8A		176	260	
		V_{GS}=18V I_D=8A T_{VJ}=175		211		
Body Diode Forward Voltage	V_{SD}	V_{GS}=0V I_S=4A		3.6		V
Continuous DC Source Current	I_S			13.5		A
Peak Reverse Drain Current,	I_{SM}			23		A
Reverse Recovery Time	t_{rr}	V_{GS} = 0V, I_{SD}=8A, V_R=400V, di/dt=1.6kA/us		12.1		ns
Reverse Recovery Charge	Q_{rr}			35.8		nC
Peak Reverse Recovery Current	I_{rrm}			5.3		A
Reverse Recovery Energy	E_{rr}			0.33		μJ

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Turn-On Delay Time	$t_{d(on)}$	V_{GS}=0/15V L=600μH V_{DD}=400V I_D=8A R_g=4.3Ω		20.4		ns
Turn-On Rise Time	t_r			11.9		
Turn-Off Delay Time	$t_{d(off)}$			17.2		
Turn-Off Fall Time	t_f			11.7		
Turn−On Switching Loss	E_{on}			79.2		μJ
Turn−Off Switching Loss	E_{off}			13.3		
Total Switching Energy	E_{tot}			92.5		
Gate resistance	R_g	V_{AC}=25mV f=1MHz		23		Ω
Input Capacitance	C_{iss}	V_{DS}=400V V_{GS}=0V f=1MHz		289		pF
Output Capacitance	C_{oss}			23		
Reverse Transfer Capacitance	C_{rss}			2.1		
Total Gate Charge	Q_g	V_{GS}=0/15V, V_{DS}=400V, I_D=10A		12.5		nC
Gate Source Charge	Q_{gs}			4.5		
Gate Drain Charge	Q_{gd}			1.5		

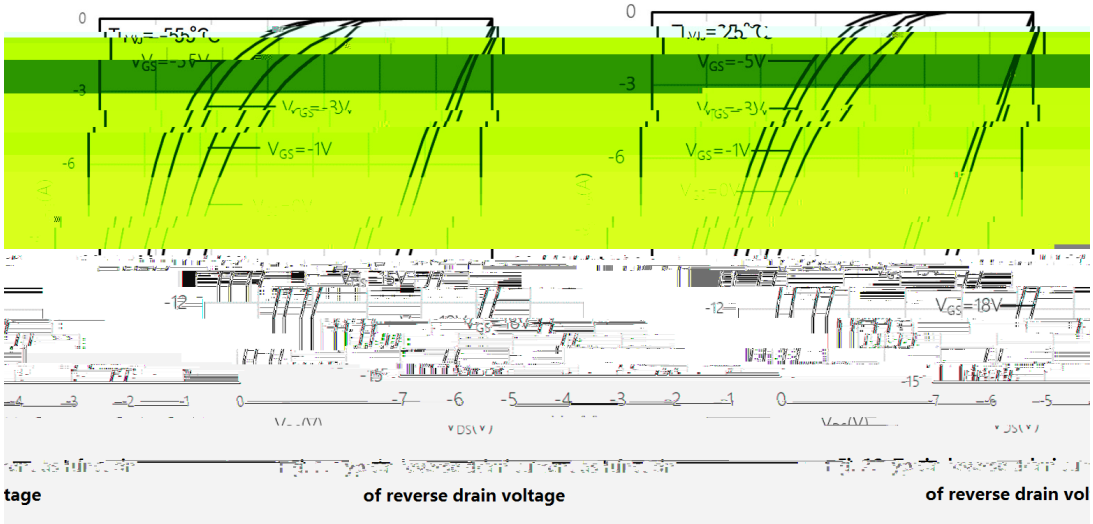
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/ Electrical Characteristic Curve



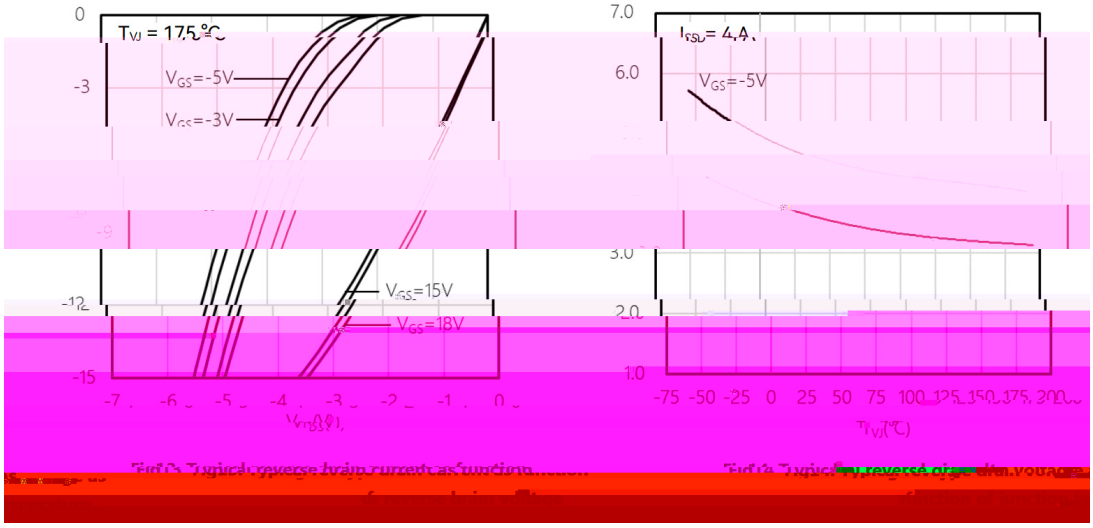


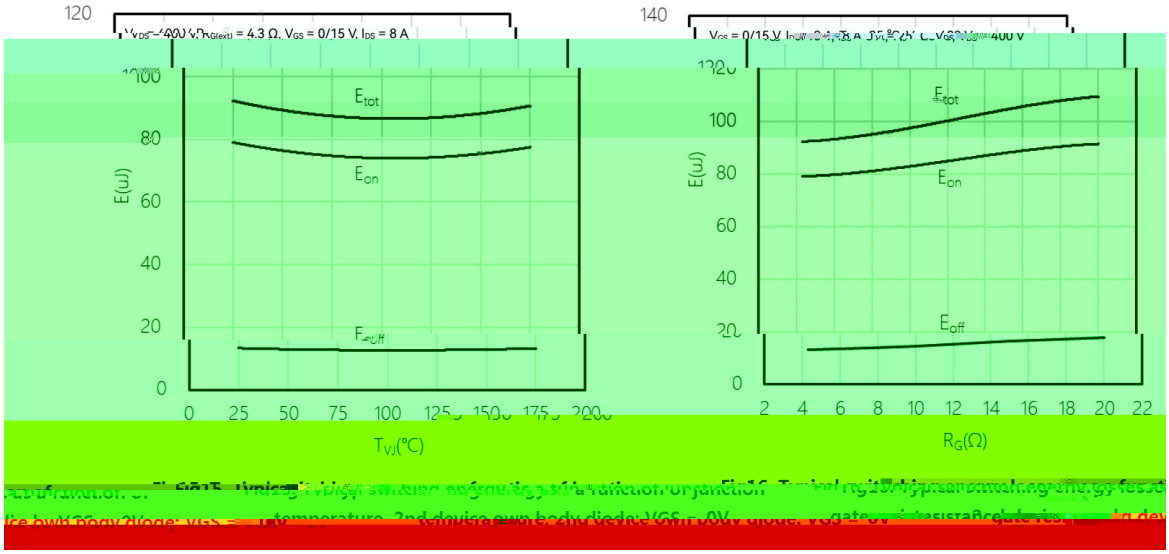
e threshold voltage — Fig10. Typical gate-source



tage — of reverse drain voltage — of reverse drain vol

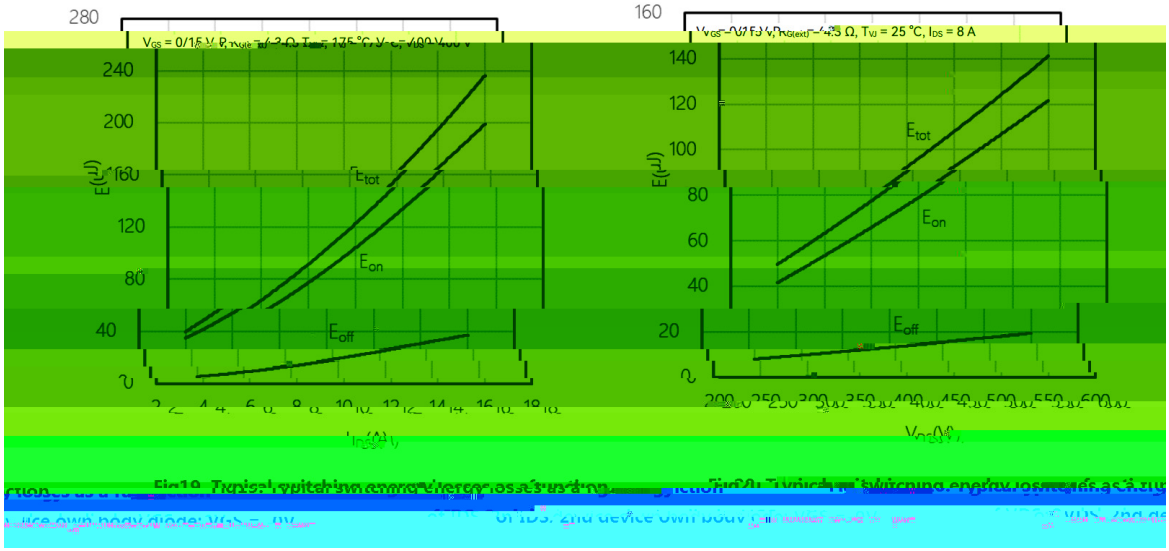
/ Electrical Characteristic Curve

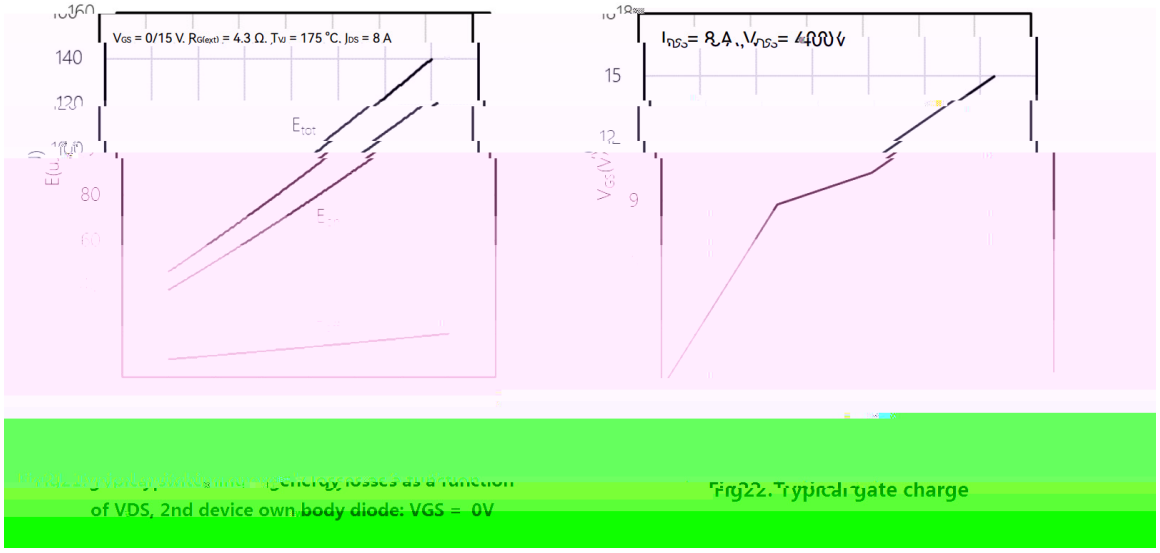






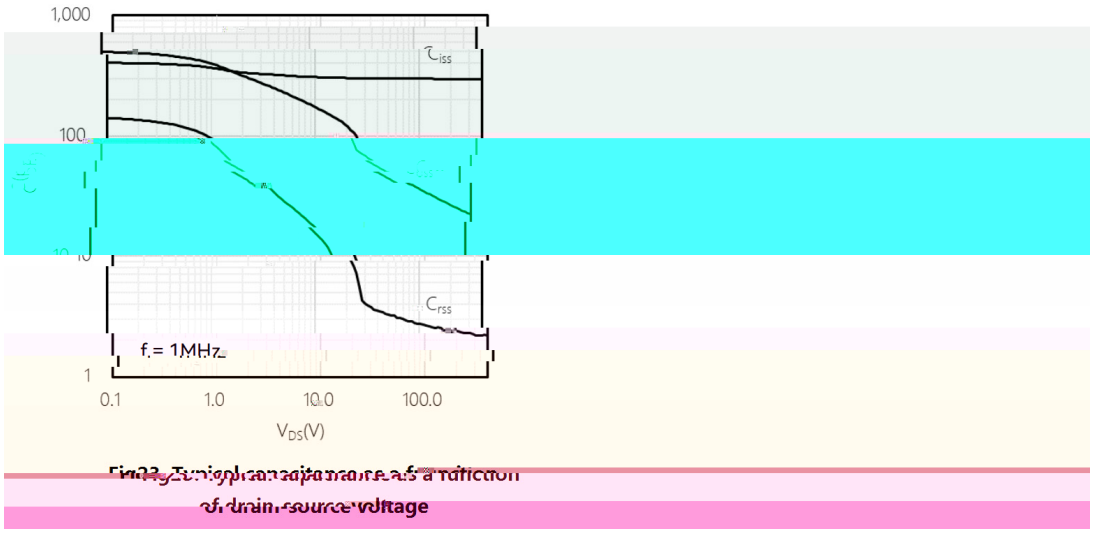
/ Electrical Characteristic Curve





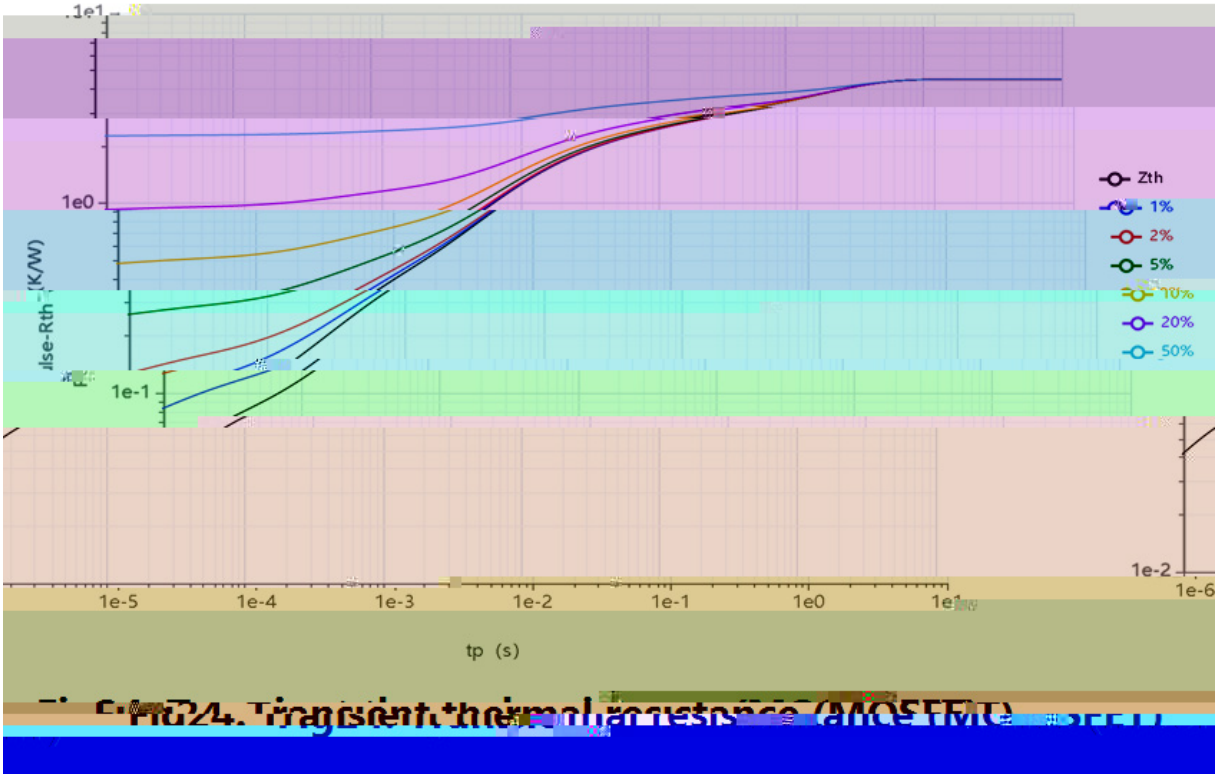
of VDS, 2nd device own body diode: VGS = 0V

Fig22. Typical gate charge



of drain-source voltage

/ Electrical Characteristic Curve



/ Package Dimensions

, M y ƒ / Marking Instructions

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65R260Z
SC ****

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Note:

BR:	Company Code
65R260Z:	Product Type Code
SC:	SiC
****:	Lot No. Code, code change with Lot No.

BRSC80R260ZFA