

BRSC65R600ZFA

Rev.B Jun.-2026



DATA SHEET

TO-220F VIF N MOS

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

$V_{DS}=650V$ $I_D=7A$

$R_{DS(on)}@15V \hat{=} 650m_{\Omega}$ (Type. $500m_{\Omega}$)

$R_{DS(on)}@18V \hat{=} 600m_{\Omega}$ (Type. $378m_{\Omega}$)

0HG

SG

SF

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	650	V
Continuous DC Drain Current for $R_{th(j-c,typ.)}$, Limited by $T_{VJ(max)}$	$I_D(T_c=25\text{ }^{\circ}\text{C})$	7	A
	$I_D(T_c=100\text{ }^{\circ}\text{C})$	5.7	A
Peak Drain Current, tp Limited by $T_{VJ(max)}$	I_{DM}	12	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}	10.2	mJ
Power Dissipation or $R_{th(j-c,typ.)}$	$P_D(T_c=25\text{ }^{\circ}\text{C})$	23	W
Operating and Storage Temperature Range	T_{VJ}, T_{STG}	-55 to 175	$^{\circ}\text{C}$
MOSFET/Body Diode Junction-Case Thermal Resistance	$R_{th(j-c)}$	6.52	$^{\circ}\text{C}/\text{W}$

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DS}	$V_{GS}=0V, I_D=100\mu A, T_J=100^{\circ}\text{C}$	650	7.02	336.96	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=3.5mA$	3		5	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=650V, V_{GS}=0V$		0.1	20	μA

A

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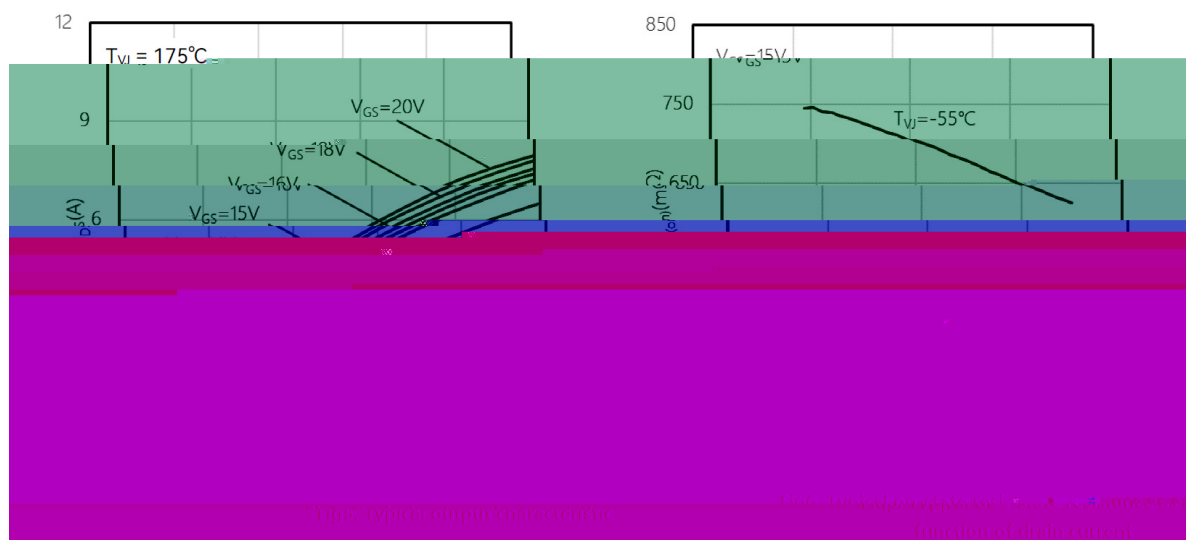
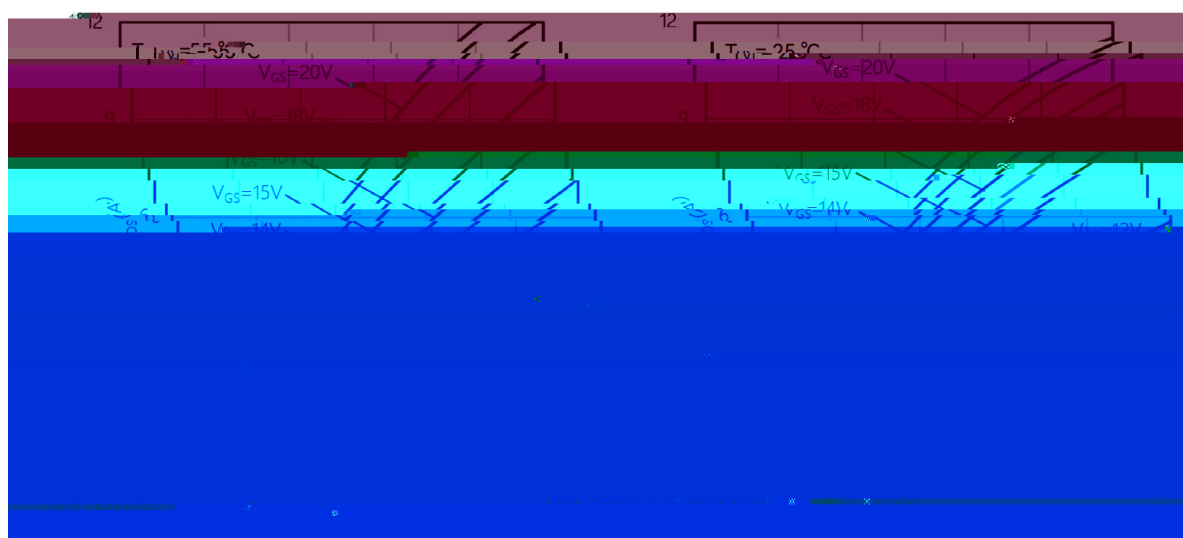
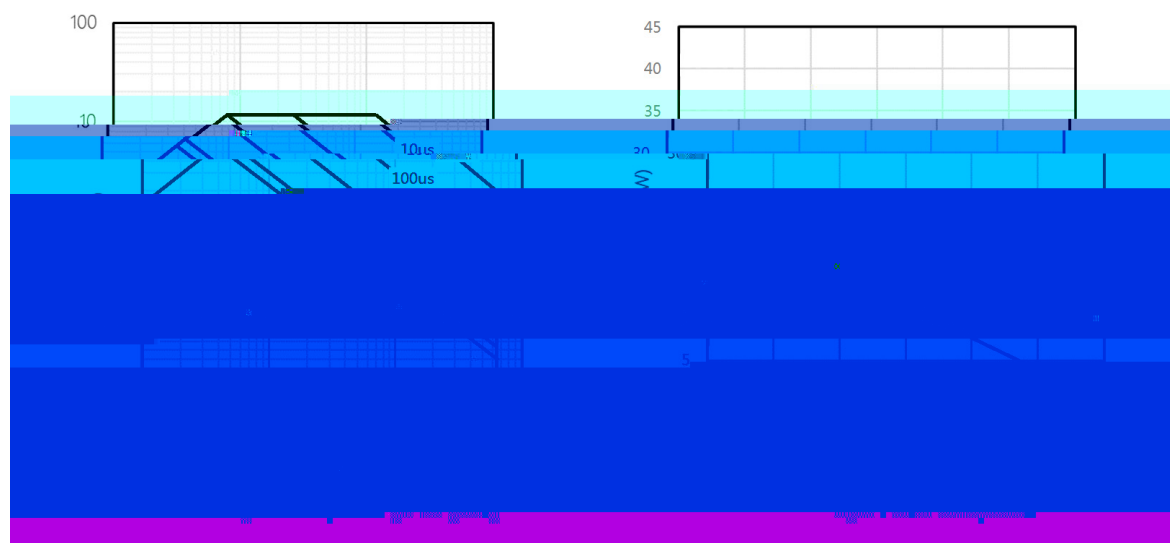
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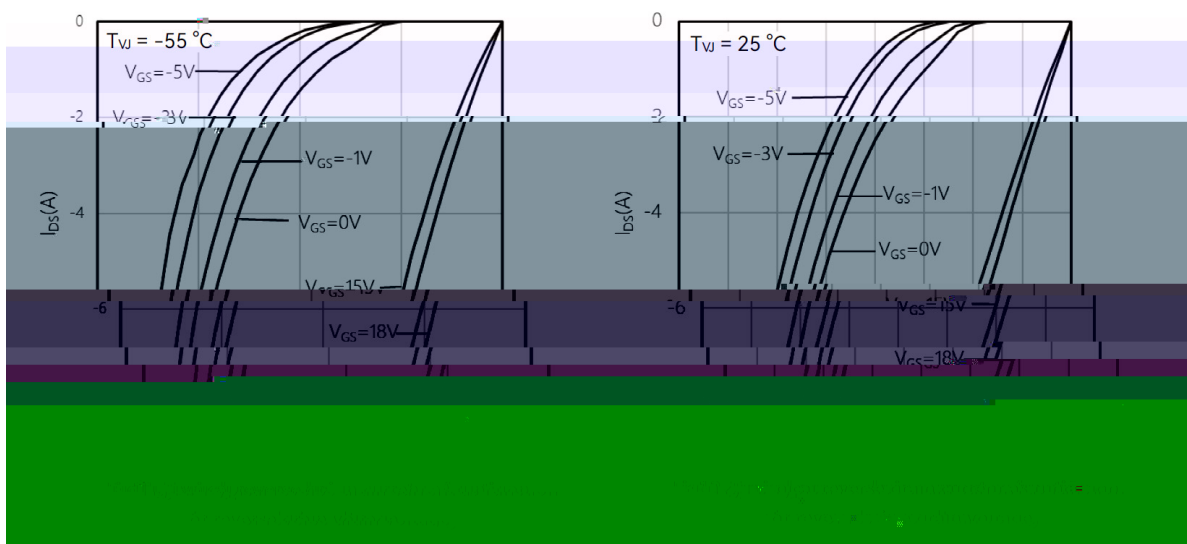
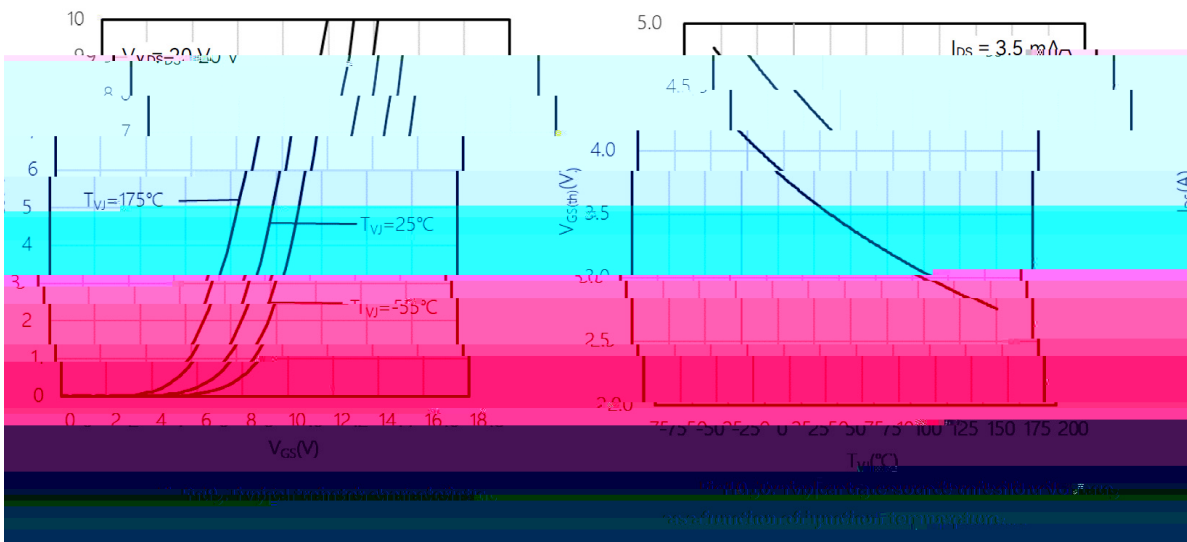
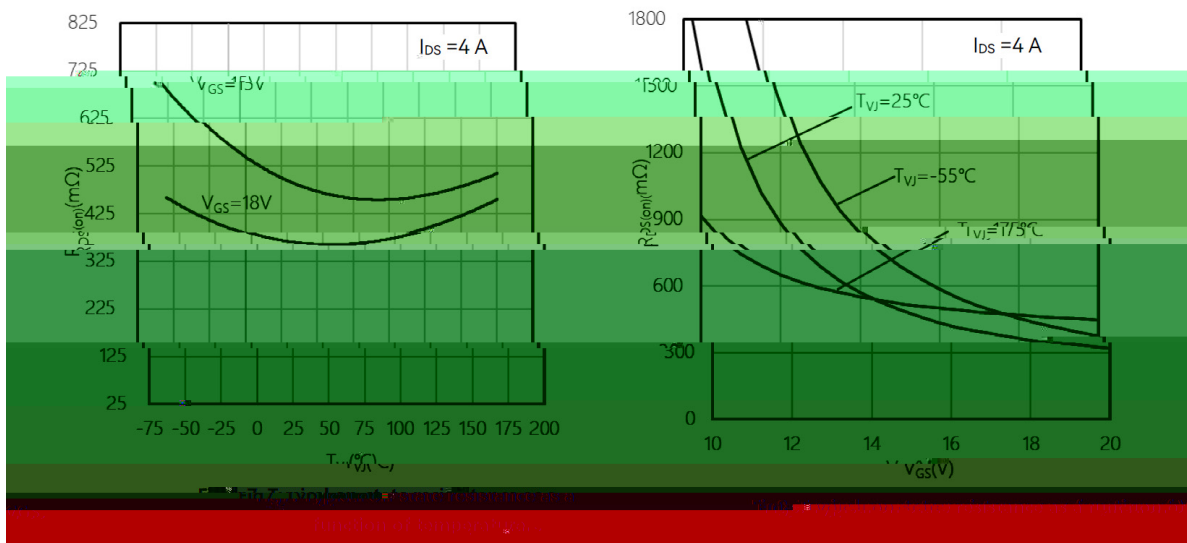
DATA SHEET

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=0/15V$ $L=600\mu H$ $V_{DD}=400V$ $I_D=4A$ $R_g=10\Omega$		16.1		ns
Turn-On Rise Time	t_r			13.9		
Turn-Off Delay Time	$t_{d(off)}$			13.3		
Turn-Off Fall Time	t_f			13.7		
Turn-On Switching Loss	E_{on}			41.2		
Turn-Off Switching Loss	E					J

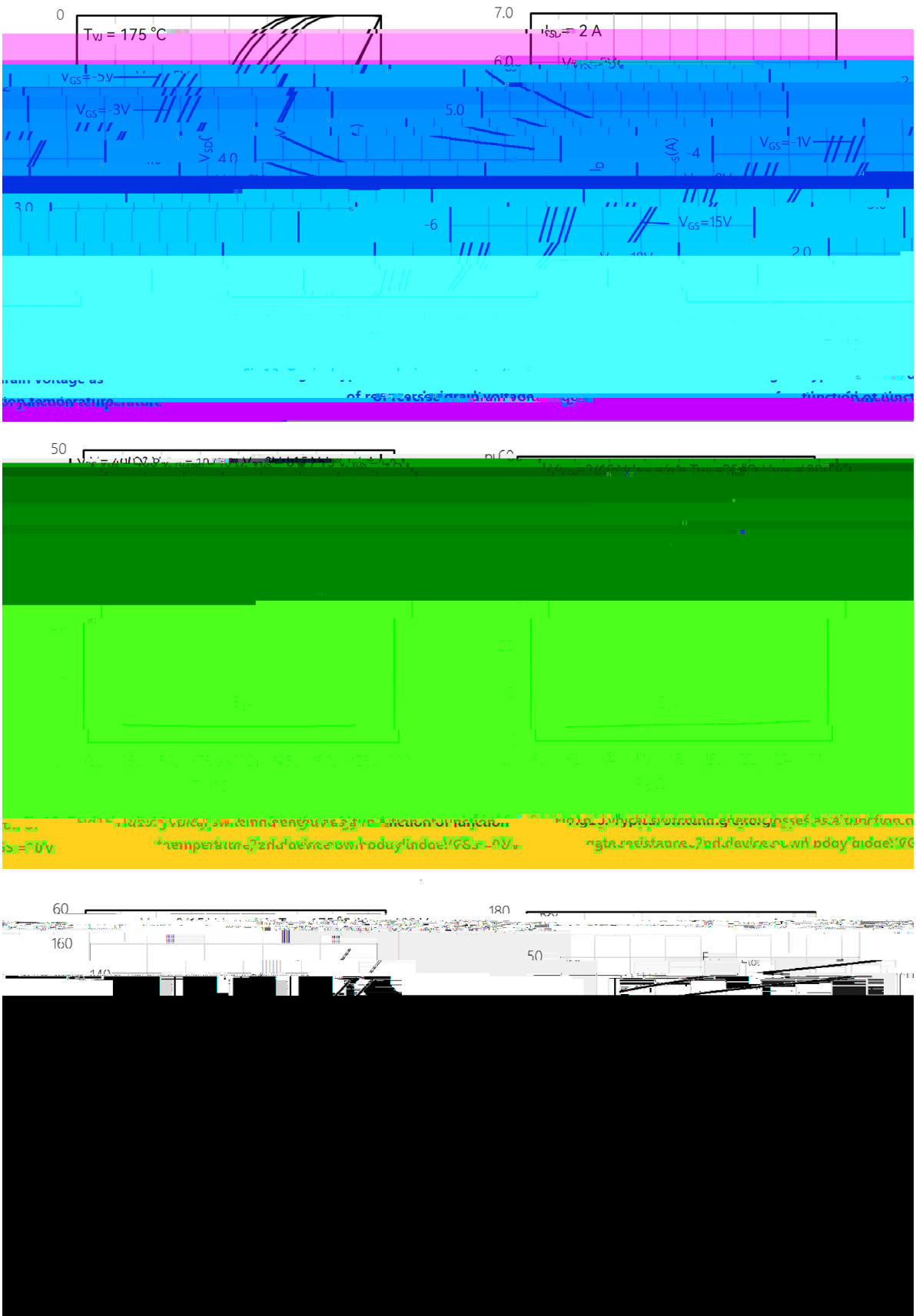
/ Electrical Characteristic Curve



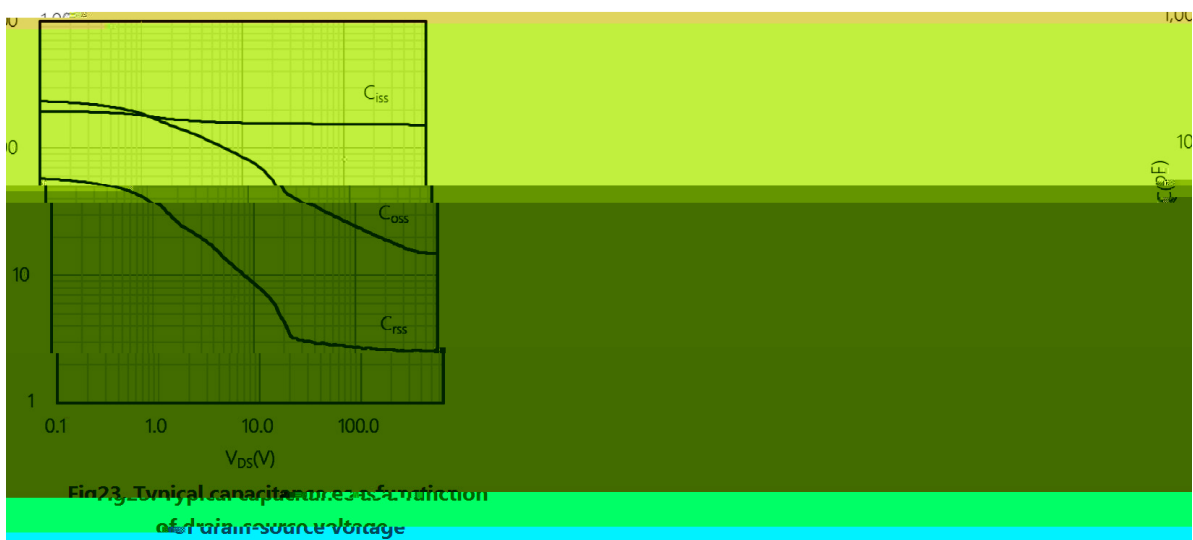
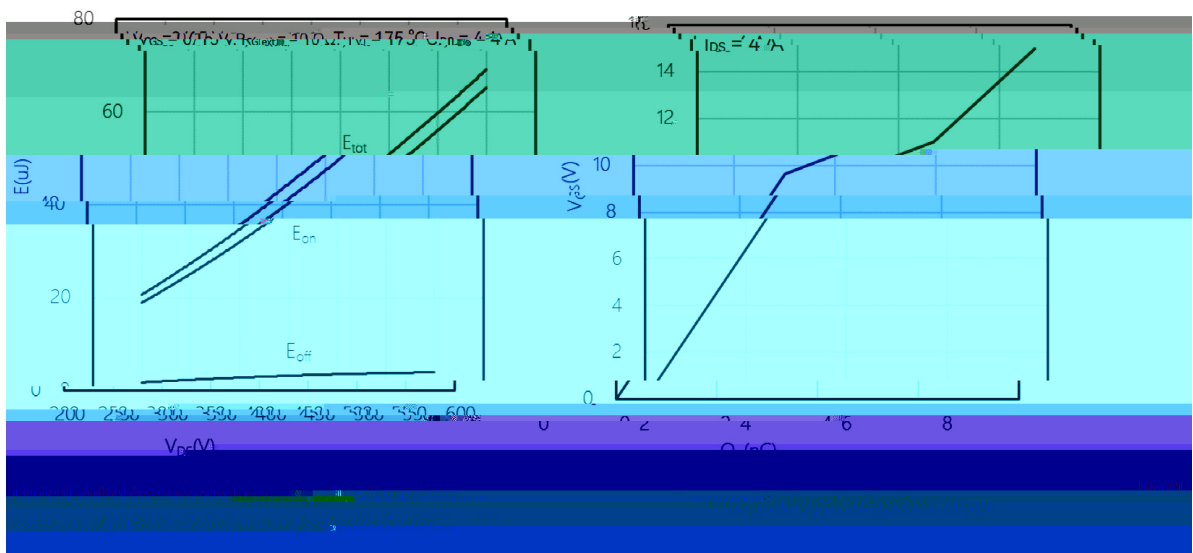
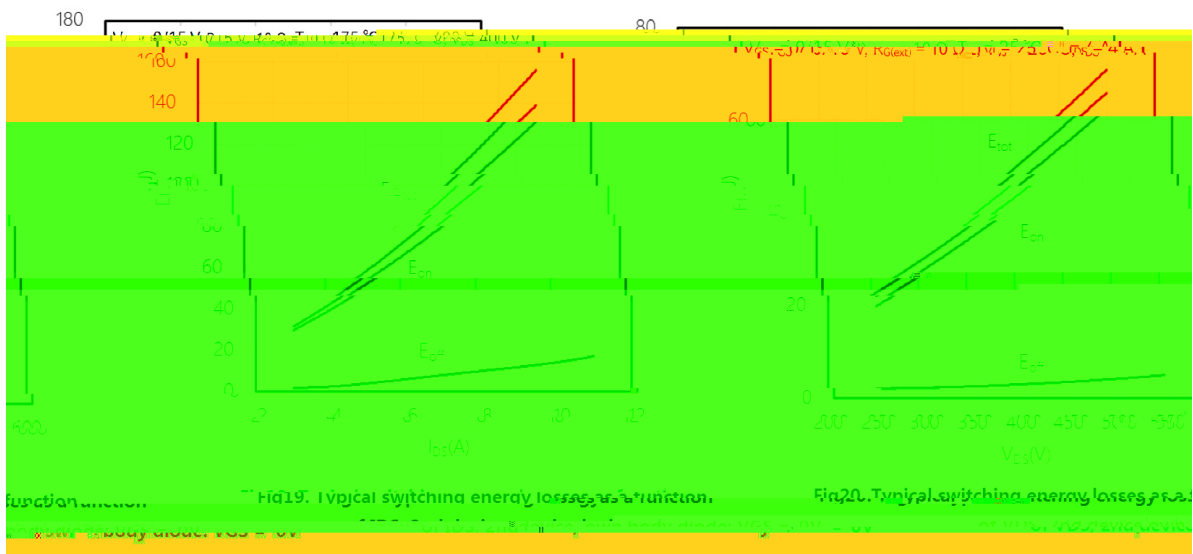
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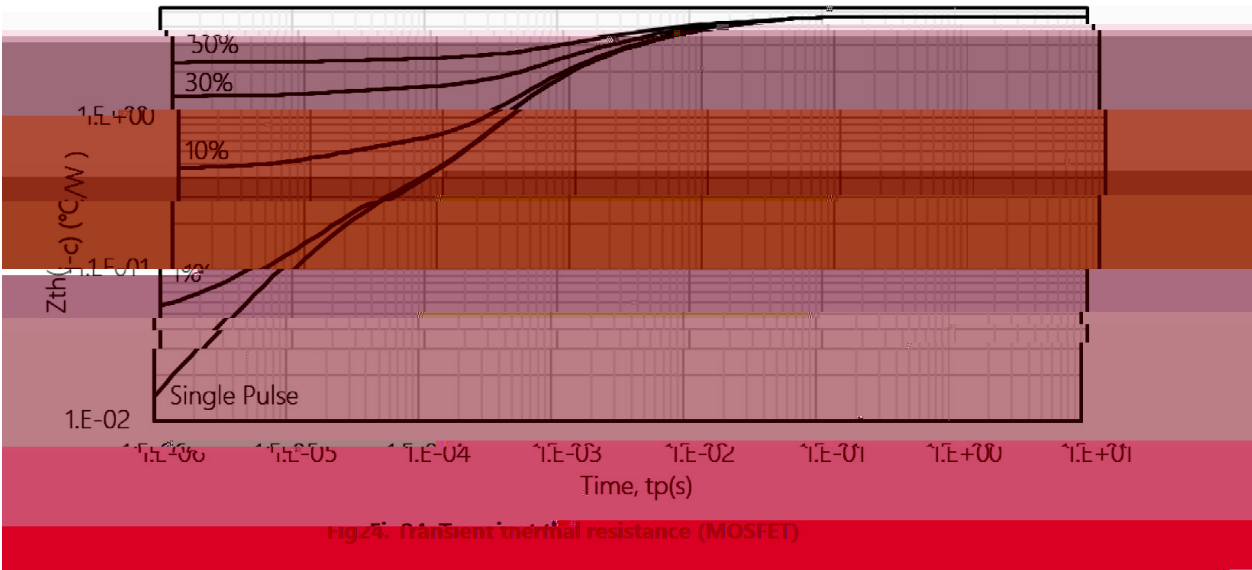
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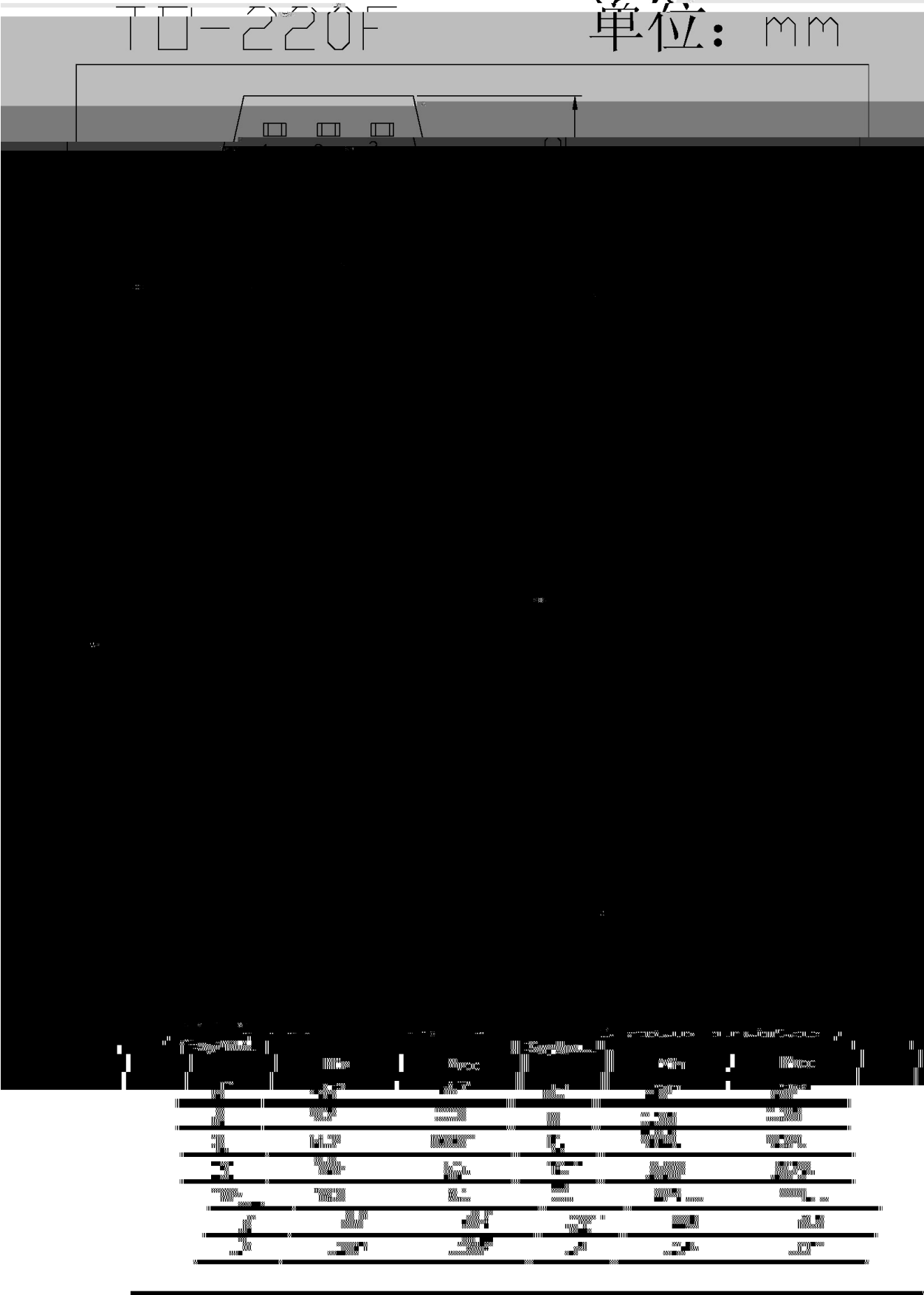
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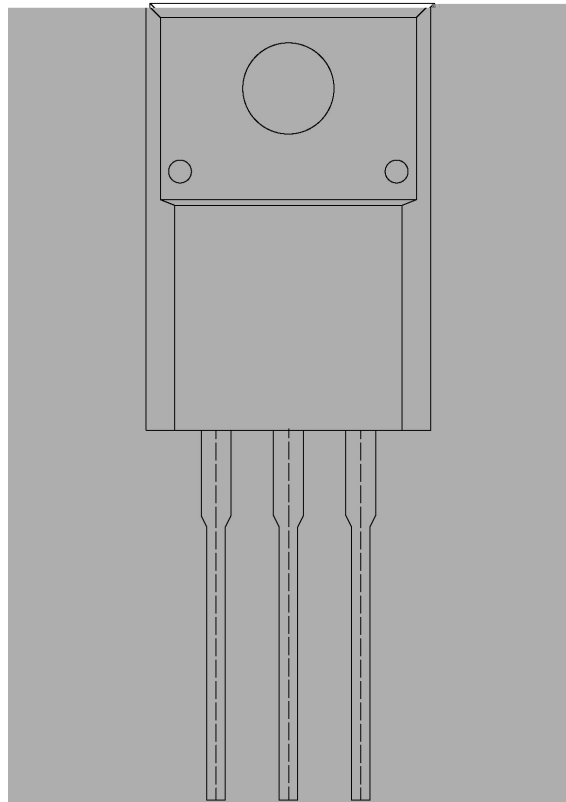


/ Electrical Characteristic Curve



/ Package Dimensions






() / Temperature Profile for Dip Soldering(Pb-Free)

Note:

- | | | | | | |
|---|-----|------|----|----------|---|
| 1 | 25 | 150% | 60 | 90sec; | 1.Preheating:25~150%, Time:60~90sec. |
| 2 | 255 | ±5% | 5 | ±0.5sec; | 2.Peak Temp.:255 ±5%, Duration:5 ±0.5sec. |
| 3 | | | 2 | 10%/sec. | 3. Cooling Speed: 2~10%/sec. |

/ In-line Package Resistance to Soldering Heat Test Conditions

270 ±5%	10 ±1 sec.	Temp.:270±5	Time:10±1 sec
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/ Packaging SPEC.

/ BULK

Package Type	Units					Dimension (unit mm ³)		
TO-220/F	200	10	2,000	5	10,000	135×190	237×172×102	560×245×195

/ TUBE

Package Type	Units					Dimension (unit mm ³)		
TO-220/F	50	20	1,000	5	5,000	532×31.4×5.5	555×164×50	575×290×180

/ Notices

All information provided in this docum