/ Descriptions

TO-220F SiC N MOS

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

/ Features

V_{DS}=800V I_D=7A

$R_{DS(on)}$@15V≤650mΩ(Type.500mΩ)

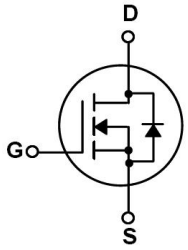
$R_{DS(on)}$@18V≤600mΩ(Type. 378mΩ)

/ Applications

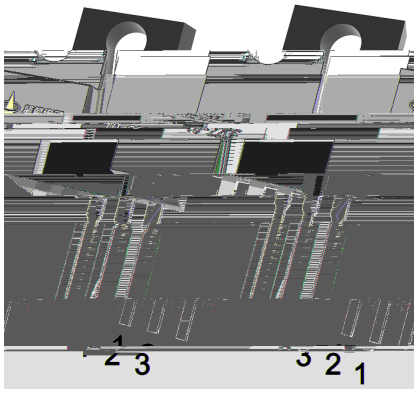
LED PD PC

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.

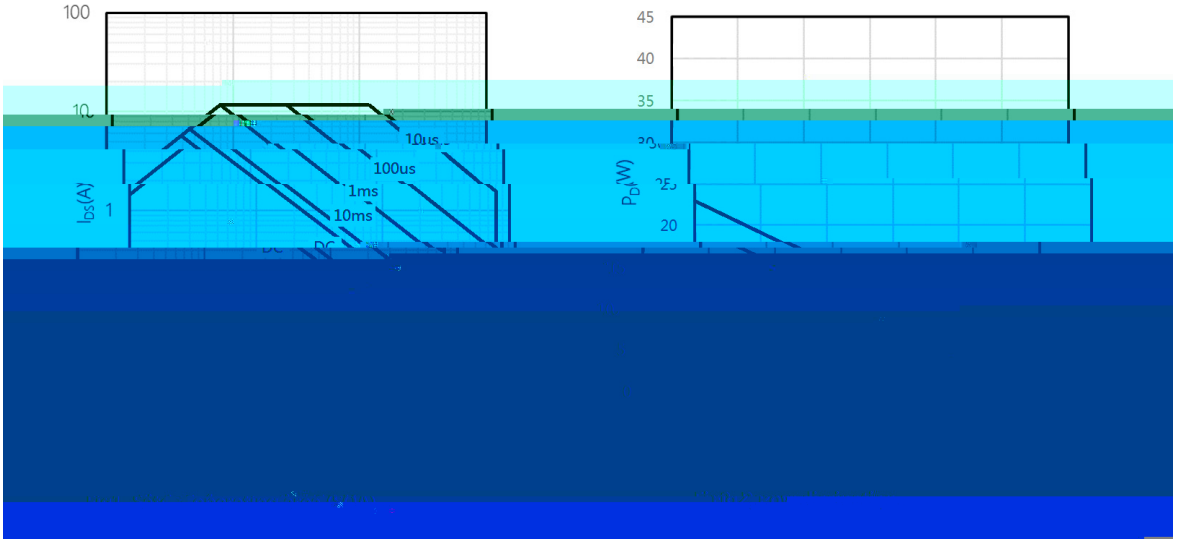
Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DSS}	800	V
Continuous DC Drain Current for $R_{th(j-c,typ.)}$, Limited by $T_{VJ(max)}$	I_D(Tc=25)	7	A
	I_D(Tc=100)	5.7	A
Peak Drain Current, tp Limited by $T_{VJ(max)}$	I_{DM}	12	A
Gate-Source Max Voltage	$V_{GS,max}$	-10/+22	V
Gate-Source Operate 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(Tc=25)	23	W
Operating and Storage Temperature Range	T_{VJ},T_{STG}	-55 to 175	
MOSFET/Body Diode Junction-Case Thermal Resistance	$R_{th(j-c)}$	6.52	/W

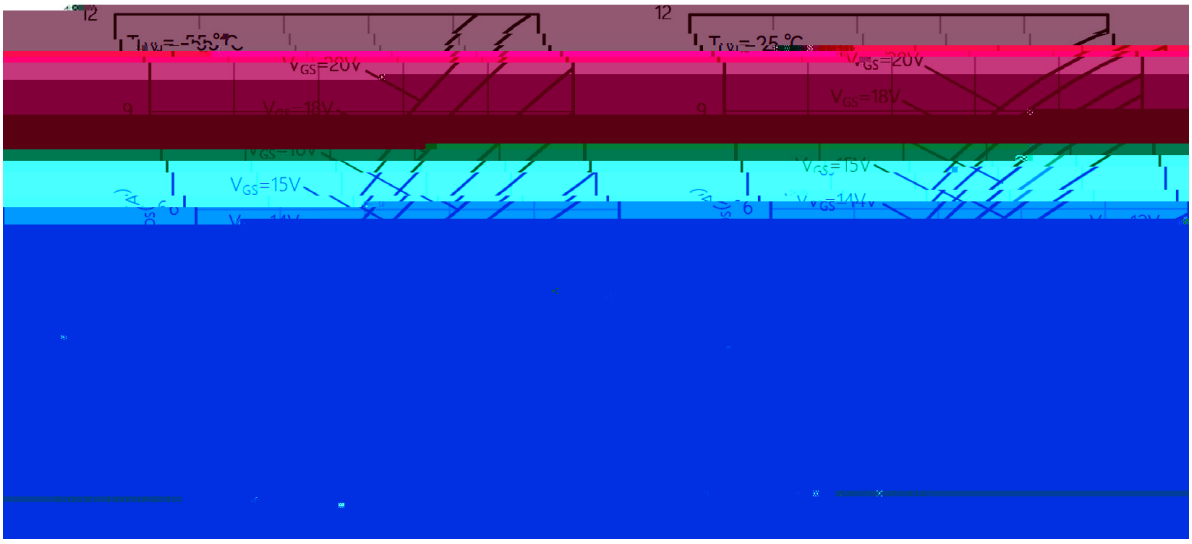
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV					

/ Electrical Characteristics(Tc=25)

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=4A R_g=10Ω		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		μJ
Turn−Off Switching Loss	E_{off}			3.1		
Total Switching Energy	E_{tot}			44.3		
Gate resistance	R_g	V_{AC}=25mV f=1MHz		35		Ω
Input Capacitance	C_{iss}	V_{DS}=400V V_{GS}=0V f=1MHz		149		pF
Output Capacitance	C_{oss}			11		
Reverse Transfer Capacitance	C_{rss}			0.8		
Total Gate Charge	Q_g	V_{GS}=0/15V, V_{DS}=400V, I_D=4A		6.7		nC
Gate Source Charge	Q_{gs}			3.0		
Gate Drain Charge	Q_{gd}			1.1		

/ Electrical Characteristic Curve





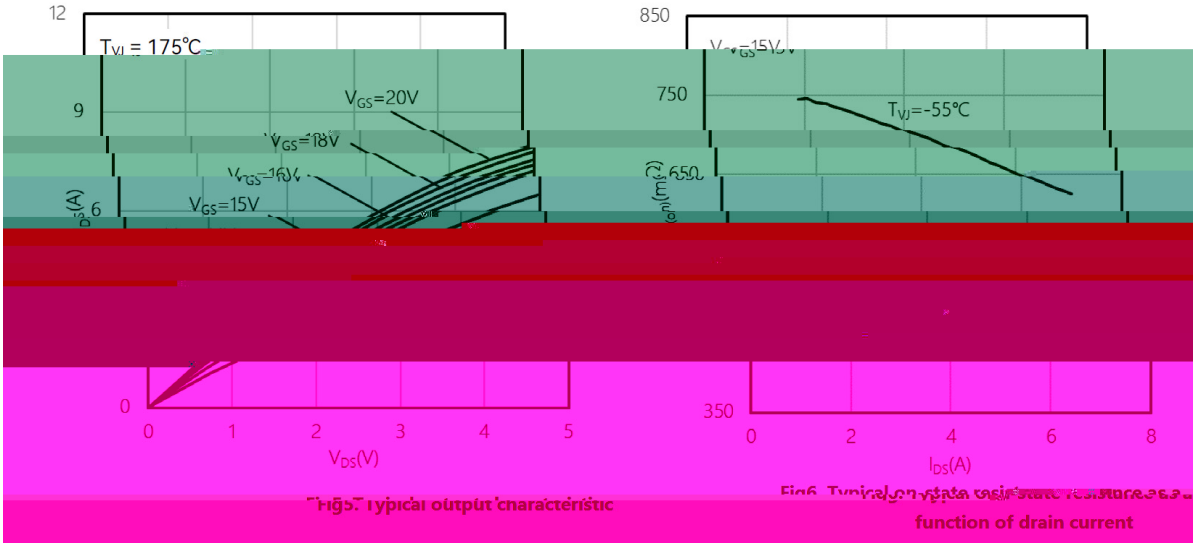
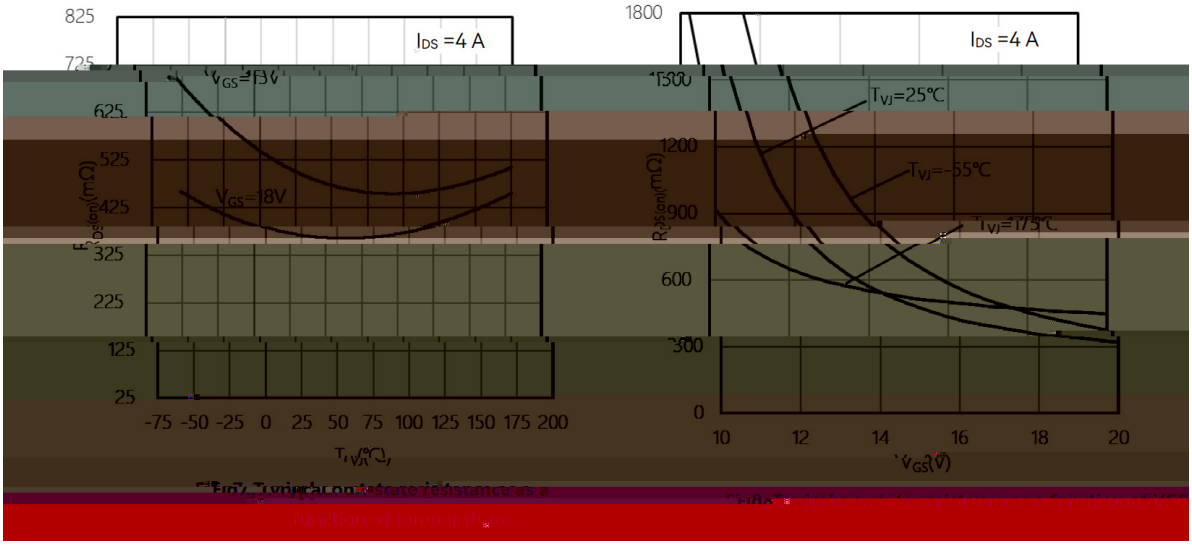
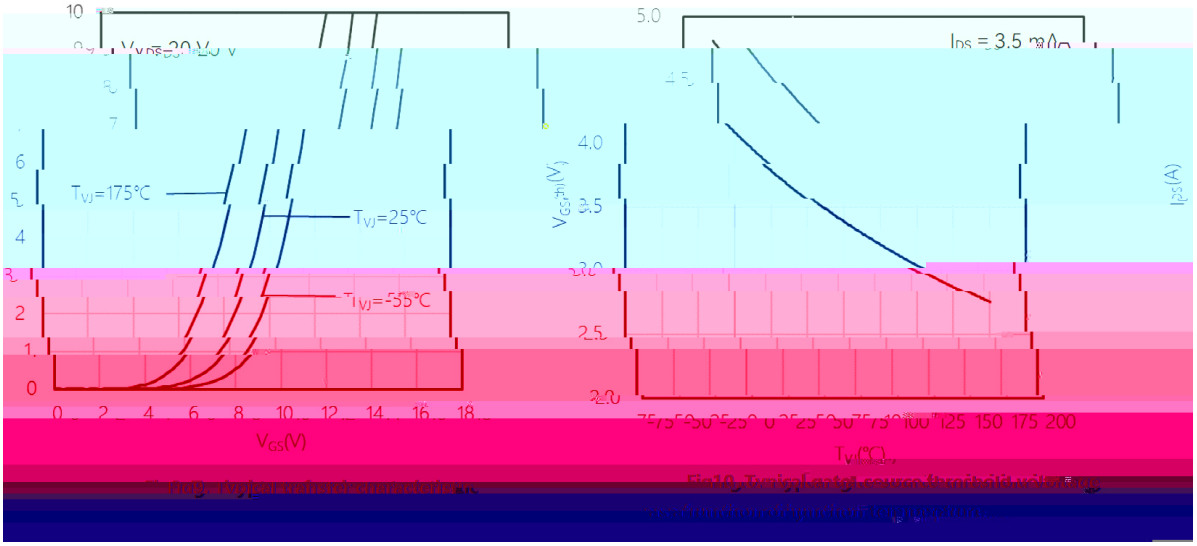


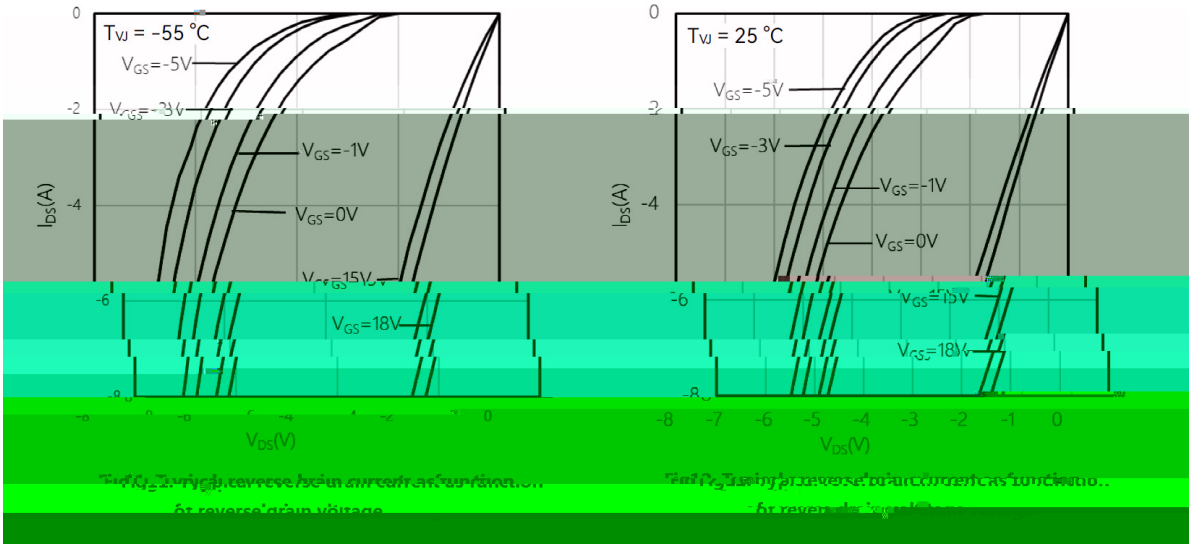
Fig5. Typical output characteristic

Fig6. Typical on-state resistance as a function of drain current

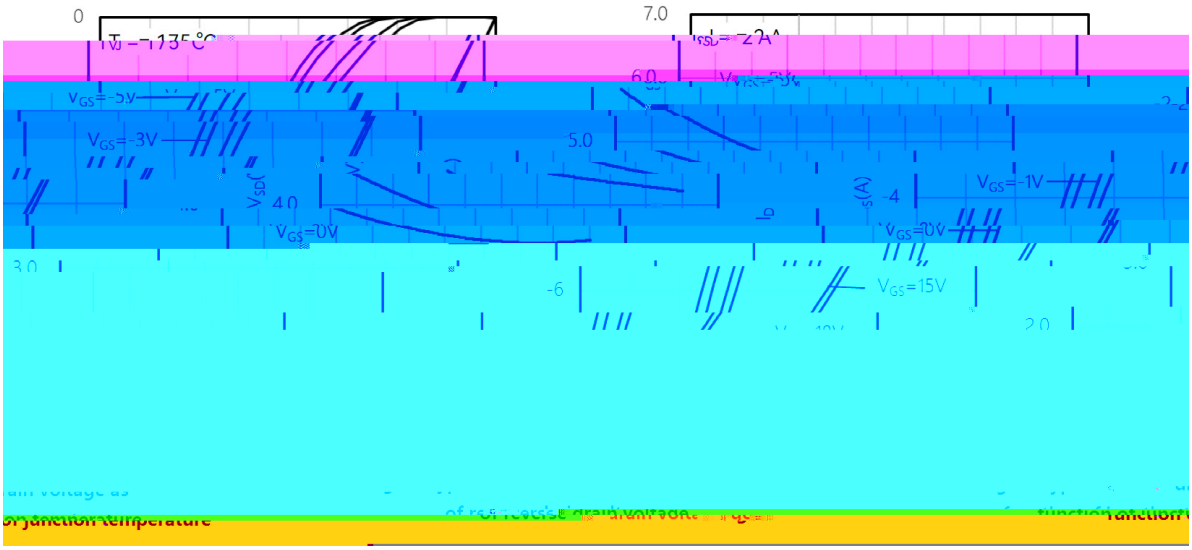
/ Electrical Characteristic Curve

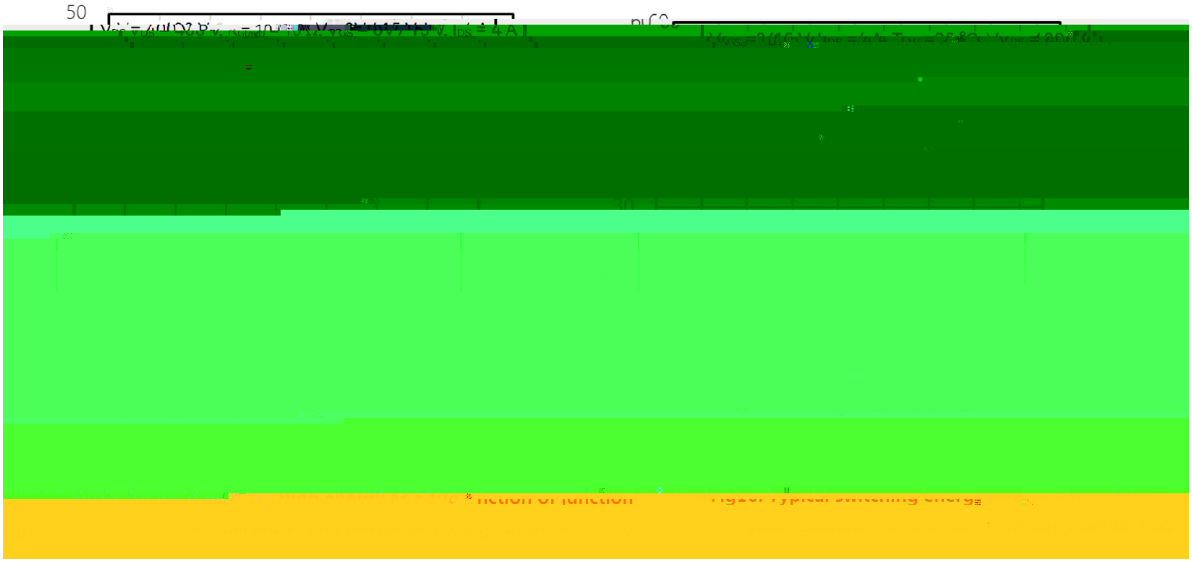






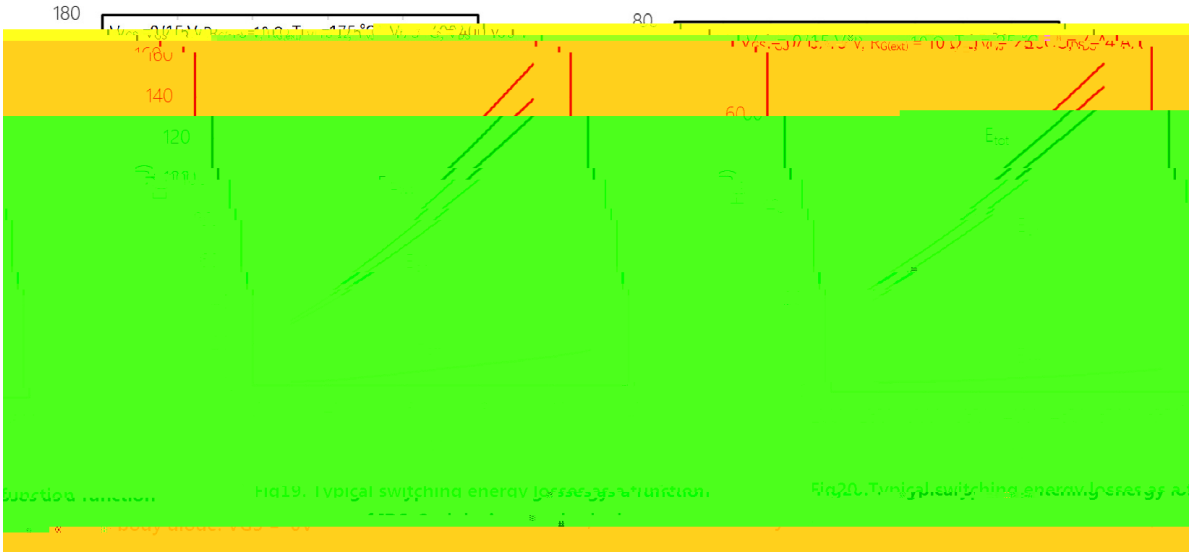
/ Electrical Characteristic Curve

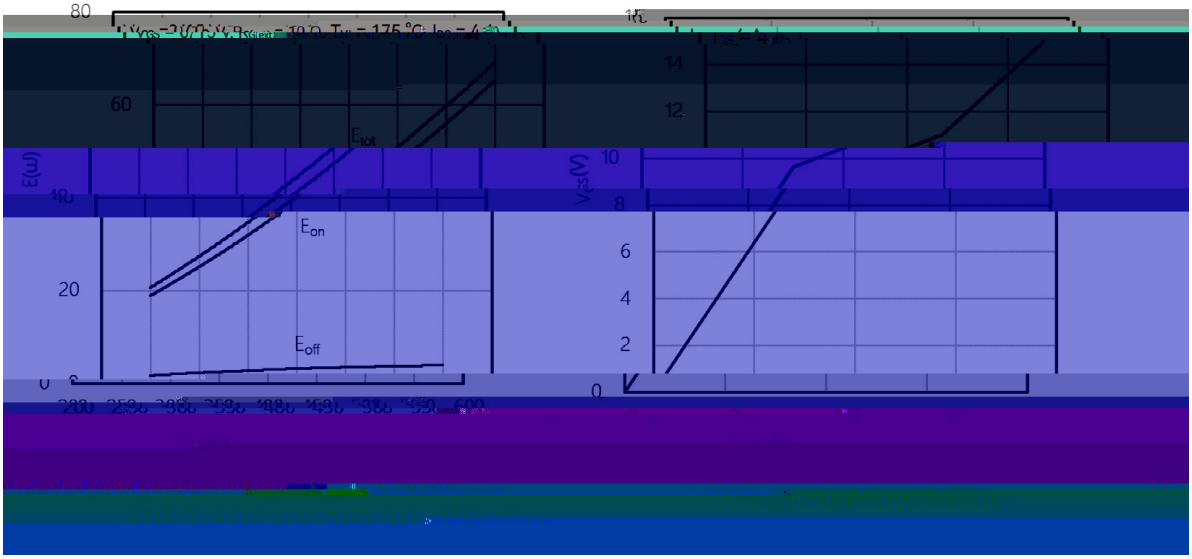






/ Electrical Characteristic Curve





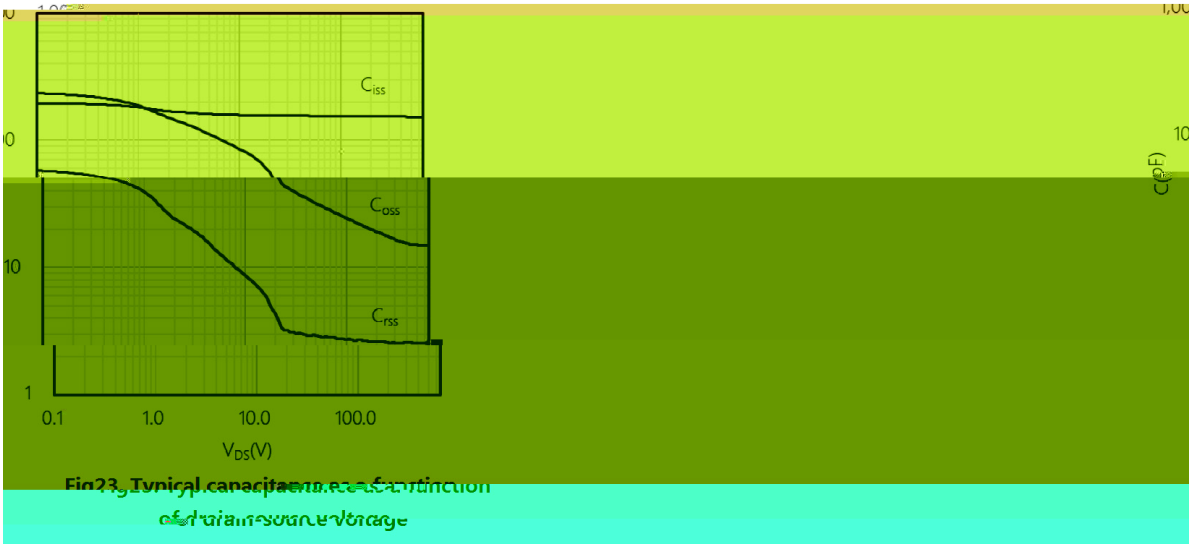


Fig23. Typical capacitance as a function of drain-source voltage

/ Electrical Characteristic Curve

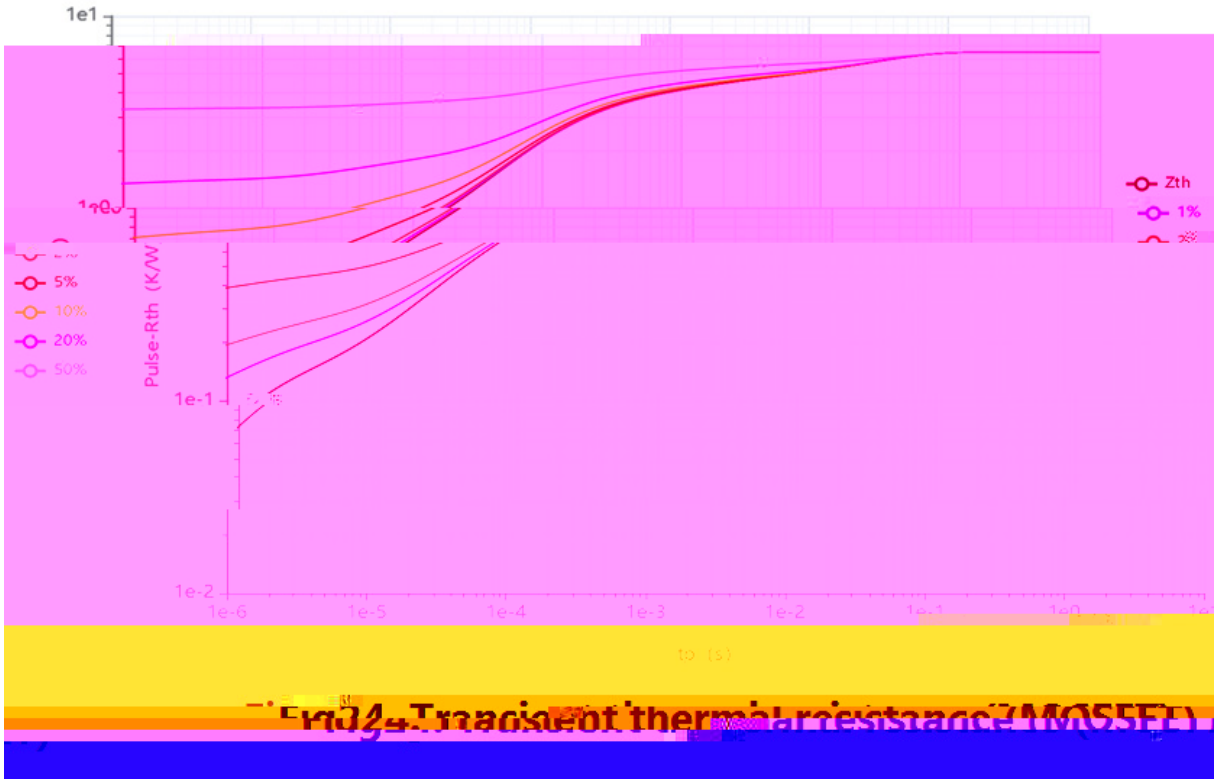
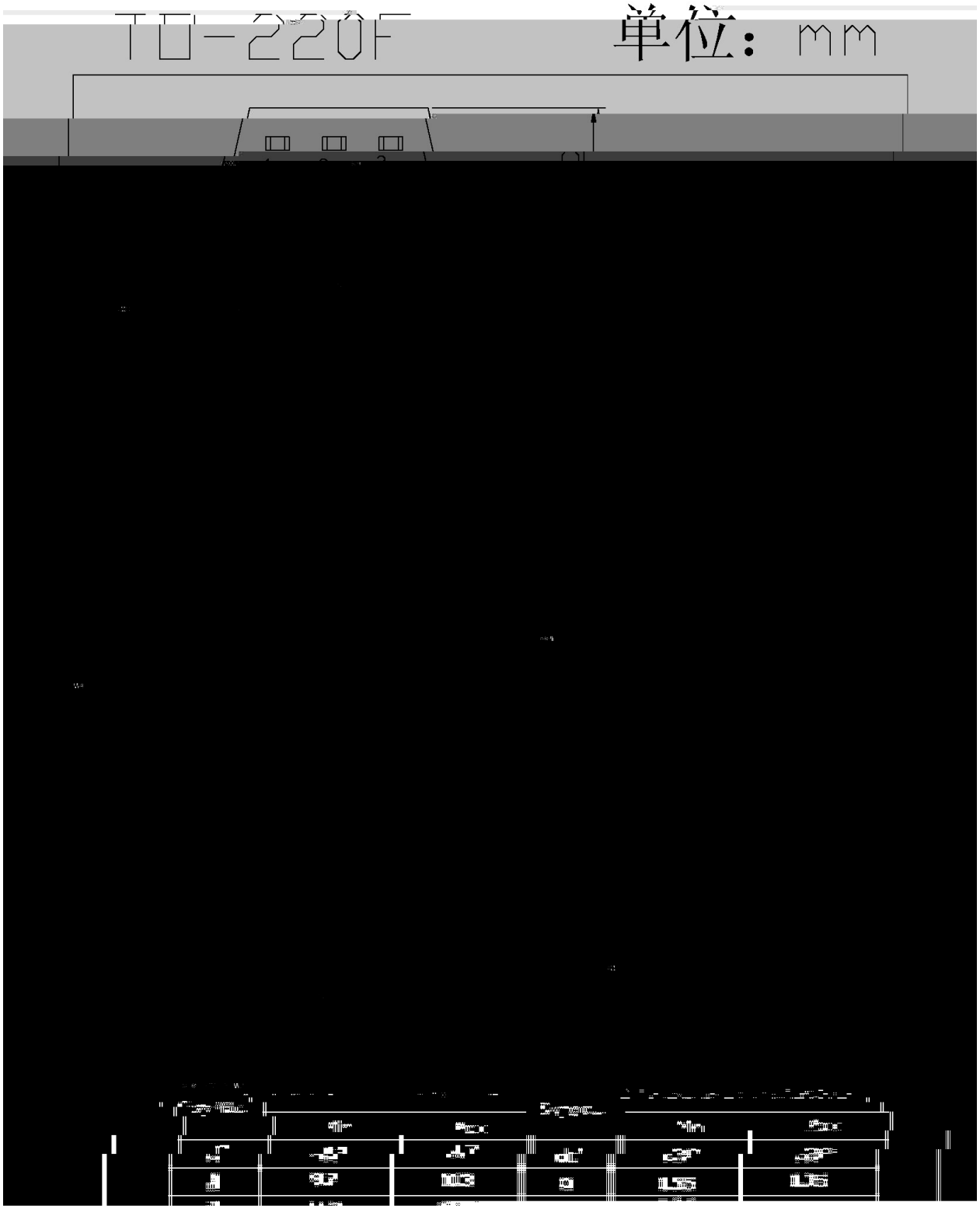
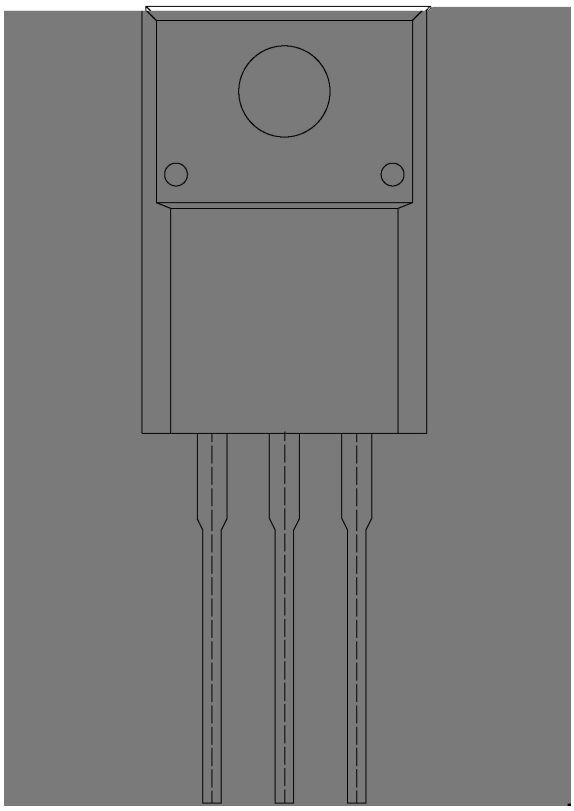


Fig.24 Transient thermal resistance(MOSFET)

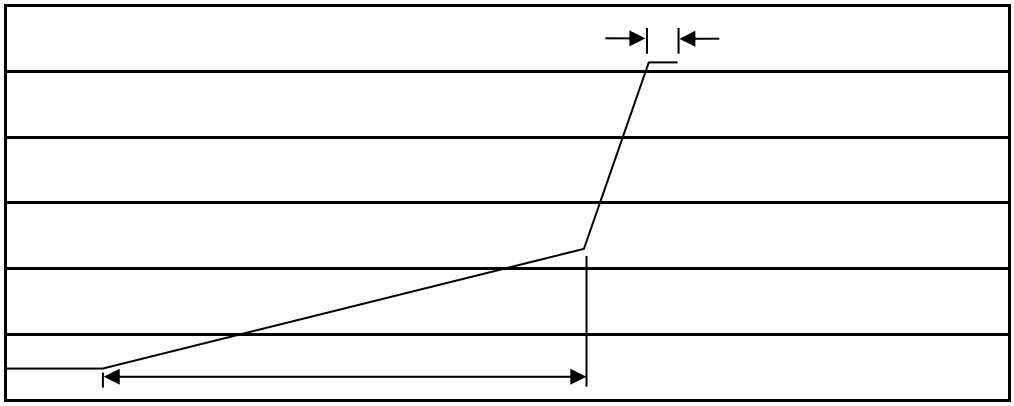
/ Package Dimensions



/ Marking Instructions



( ) / 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

/ Packaging SPEC.

/ BULK

Package Type	Units					Dimension		(unit mm³)
TO-220/F	200	10	2,000	5	10,000	135×190	237×172×102	560×245×195

/ TUBE

Package Type	Units					Dimension		(unit mm³)
TO-220/F	50	20	1,000	5	5,000	532×31.4×5.5	555×164×50	575×290×180

/ Notices

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