

/ Descriptions

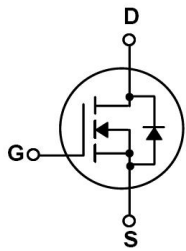
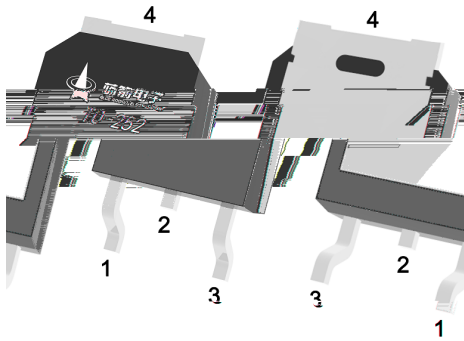
TO-252 SiC N MOS

SiC N-CHANNEL MOSFET in a TO-252 Plastic Package.

/ Features $V_{DS}=800V$ $I_D=8.8A$ $R_{DS(on)}@15V \leq 568m\Omega$ (Type. 437m Ω) $R_{DS(on)}@18V \leq 480m\Omega$ (Type. 316m Ω)**/ 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

PIN 4 D

/ Marking

See Marking Instructions.

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	800	V
Continuous DC Drain Current for $R_{th(j-c,typ.)}$, Limited by $T_{VJ(max)}$	$I_D(T_c=25^\circ C)$	8.8	A
	$I_D(T_c=100^\circ C)$	6.8	A
Peak Drain Current, tp Limited by $T_{VJ(max)}$	I_{DM}	14	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}	13.3	mJ
Power Dissipation or $R_{th(j-c,typ.)}$	$P_D(T_c=25^\circ C)$	45	W
Operating and Storage Temperature Range	T_{VJ}, T_{STG}	-55 to 175	
MOSFET/Body Diode Junction-Case Thermal Resistance	$R_{th(j-c)}$	3.33	/W

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	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=3.5mA$	3		5	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	$R_{DS(on)}$	$V_{GS}=15V$ $I_D=4.5A$		437	568	m Ω
		$V_{GS}=15V$ $I_D=4.5A$ $T_{VJ}=175$		406		
		$V_{GS}=18V$ $I_D=4.5A$		316	480	
		$V_{GS}=18V$ $I_D=4.5A$ $T_{VJ}=175$		379		
Body Diode Forward Voltage	V_{SD}	$V_{GS}=0V$ $I_S=2.5A$		3.8		V
Continuous DC Source Current	I_S			8		A
Peak Reverse Drain Current,	I_{SM}			14		A

=175t2

/ Electrical Characteristics(Tc=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=0/15V$ $L=600\mu H$ $V_{DD}=400V$ $I_D=4.5A$ $R_g=9.1$		17.0		ns
Turn-On Rise Time	t_r			12.2		
Turn-Off Delay Time	$t_{d(off)}$			14.5		
Turn-Off Fall Time	t_f			13.1		
Turn-On Switching Loss	E_{on}			45.4		μJ
Turn-Off Switching Loss	E_{off}			3.86		
Total Switching Energy	E_{tot}			49.2		
Gate resistance	R_g	$V_{AC}=25mV$ $f=1MHz$		25		Ω
Input Capacitance	C_{iss}	$V_{DS}=400V$ $V_{GS}=0V$ $f=1MHz$		170		pF
Output Capacitance	C_{oss}			13		
Reverse Transfer Capacitance	C_{rss}			1.3		
Total Gate Charge	Q_g	$V_{GS}=0/15V,$ $V_{DS}=400V,$ $I_D=4.5A$		9.0		nC
Gate Source Charge	Q_{gs}			3.2		
Gate Drain Charge	Q_{gd}			1.3		

/ Electrical Characteristic Curve

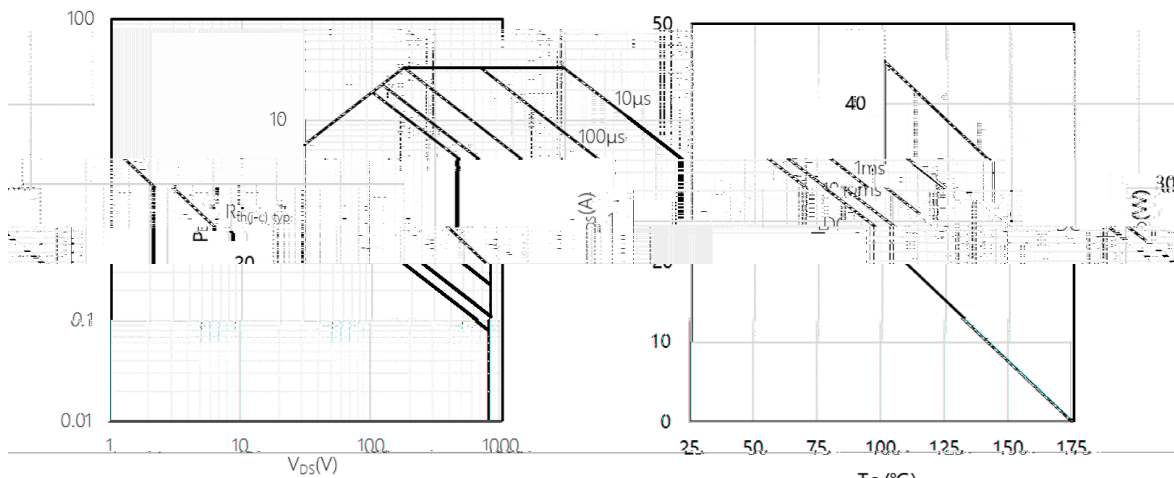


Fig1. Safe operating area (SOA)

Fig2. Power dissipation

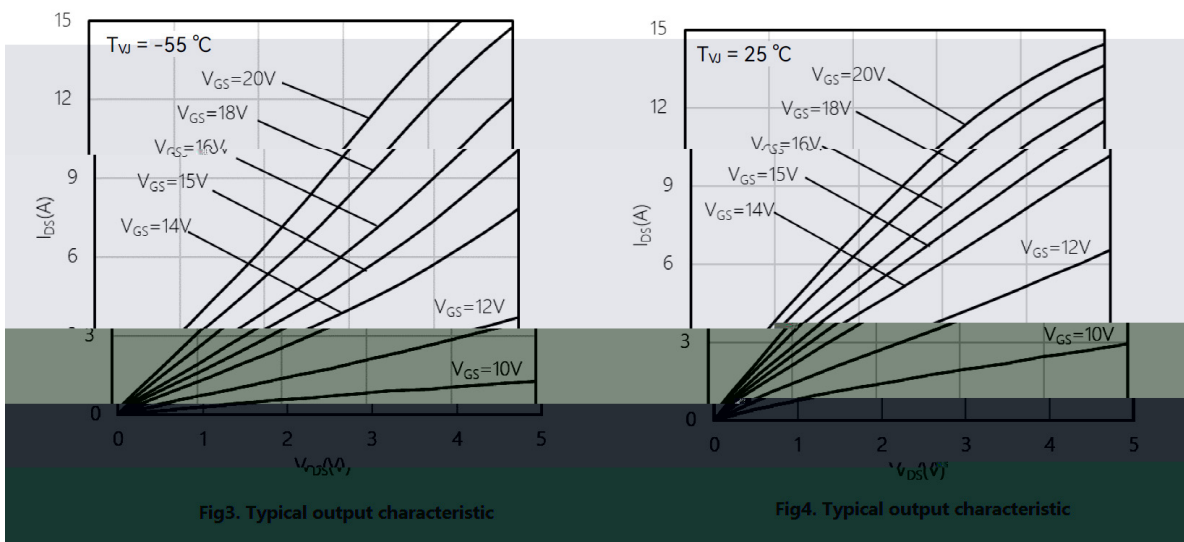


Fig3. Typical output characteristic

Fig4. Typical output characteristic

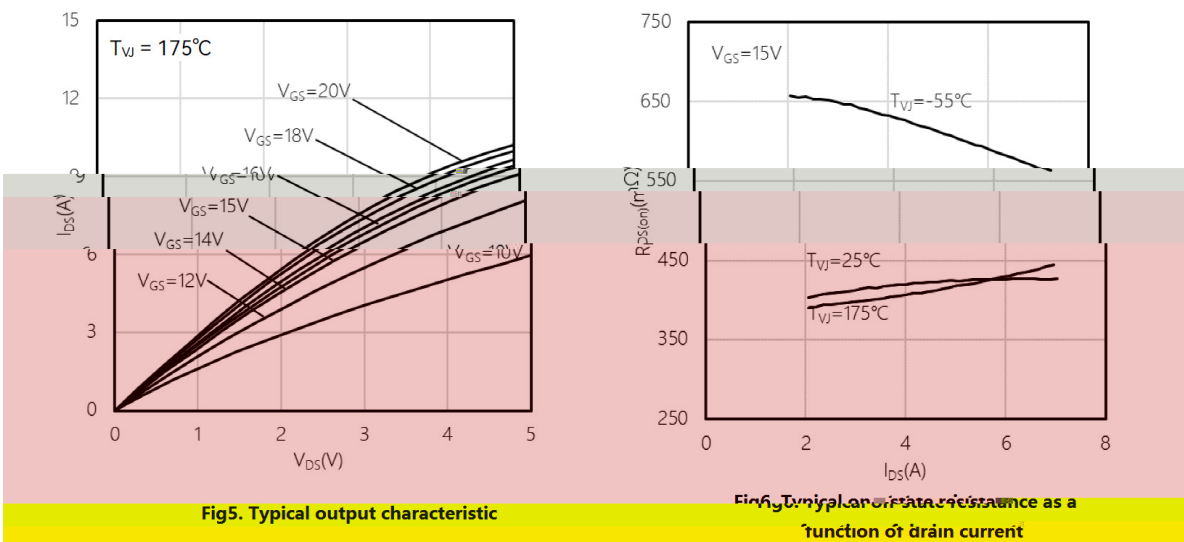
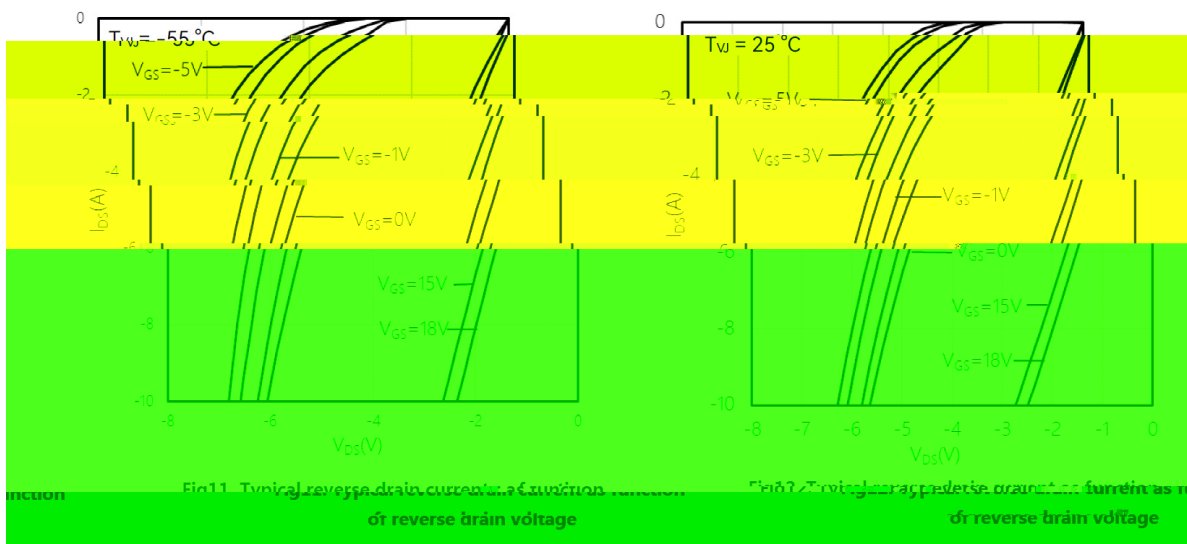
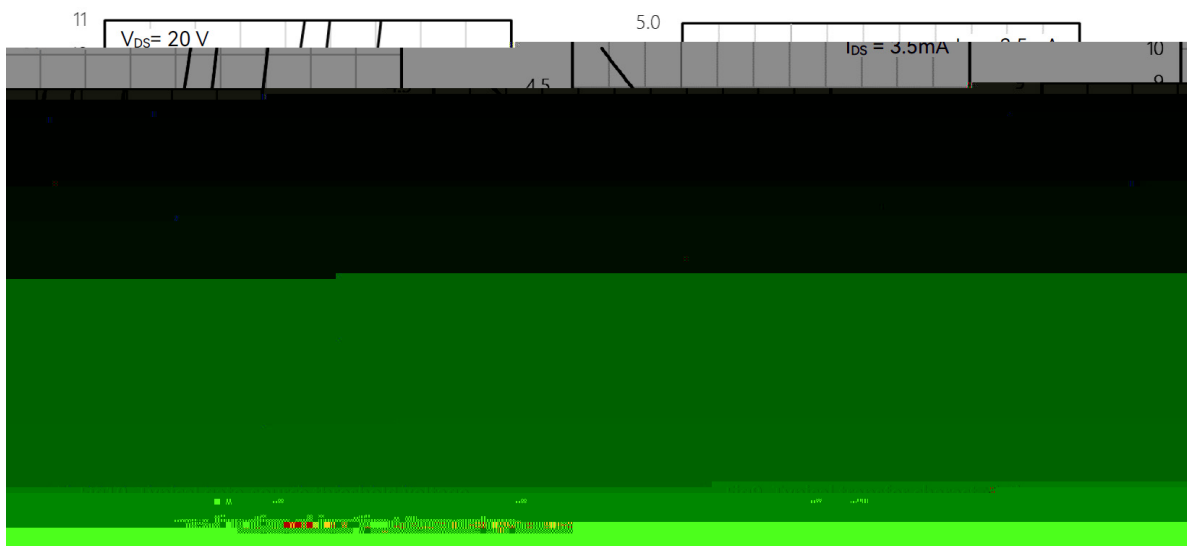
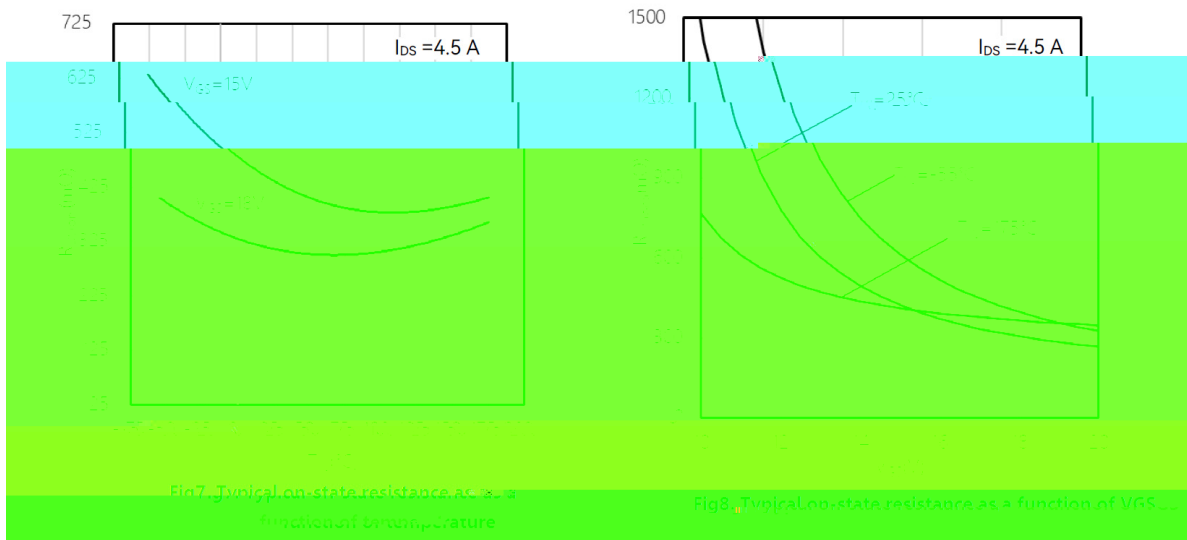


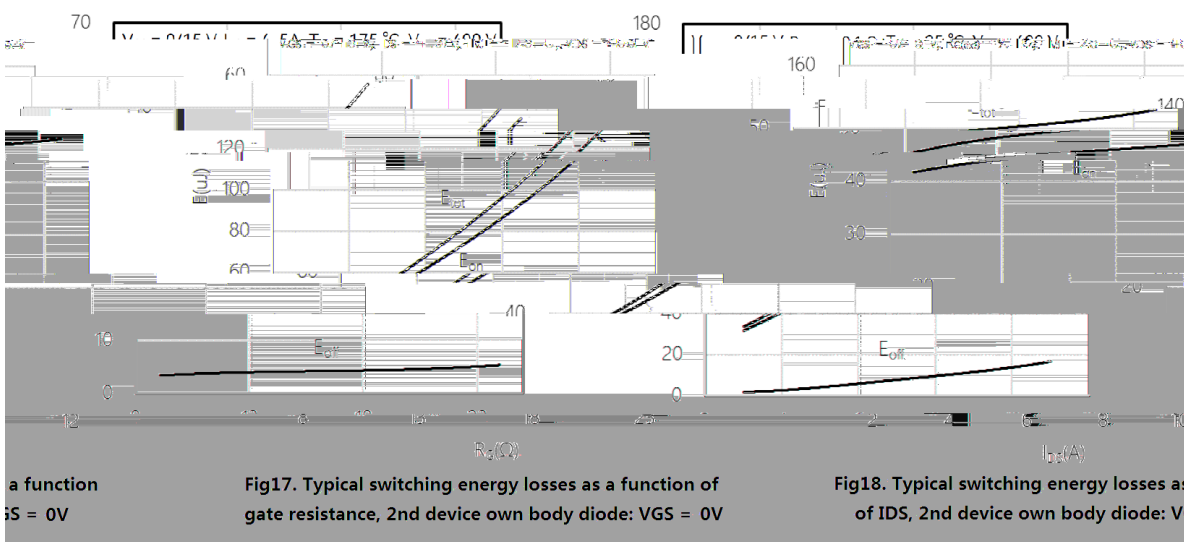
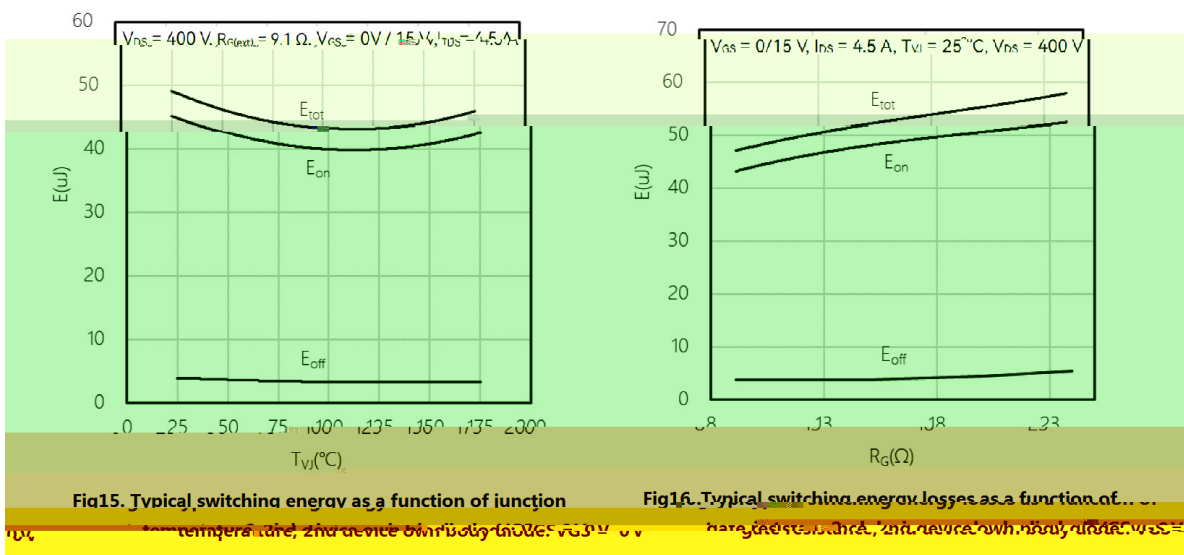
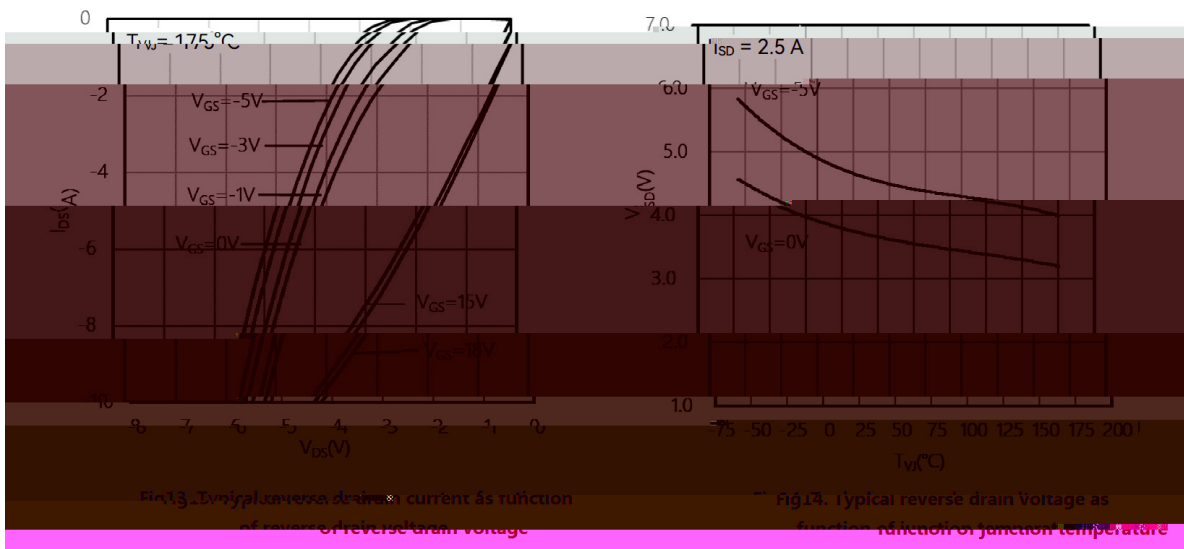
Fig5. Typical output characteristic

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

/ Electrical Characteristic Curve



/ Electrical Characteristic Curve



/ Electrical Characteristic Curve

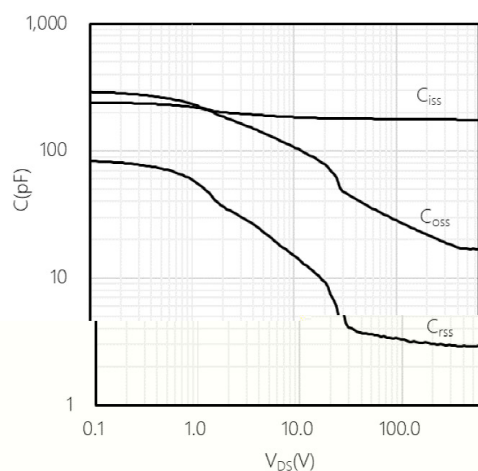
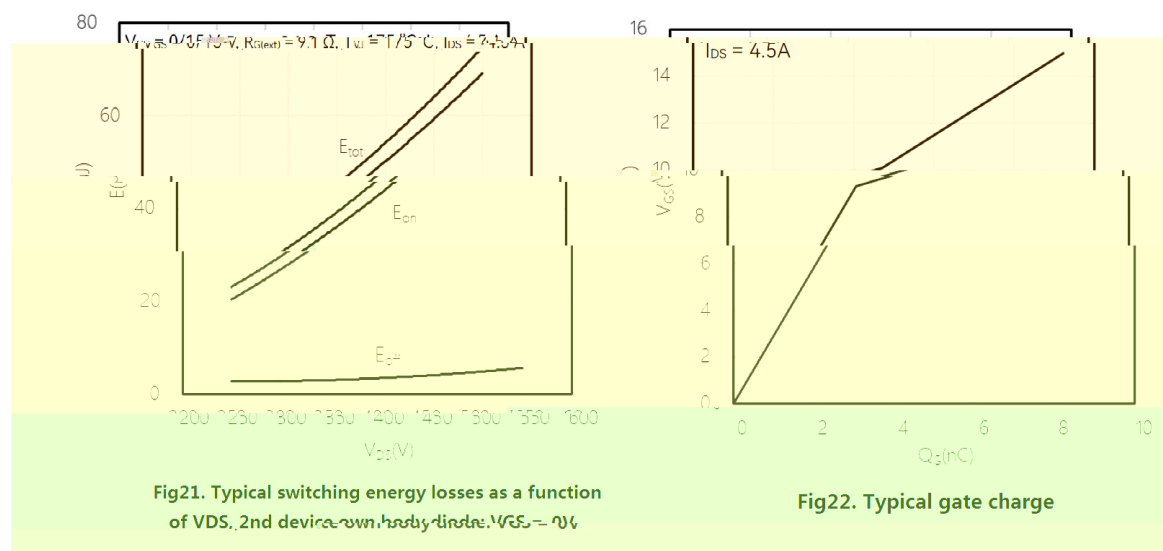
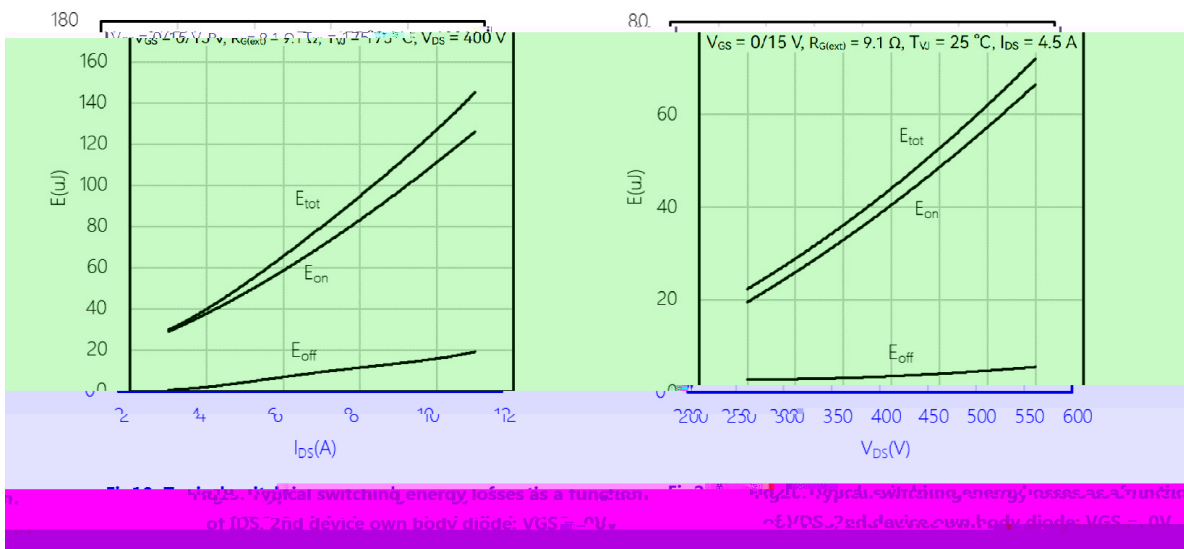
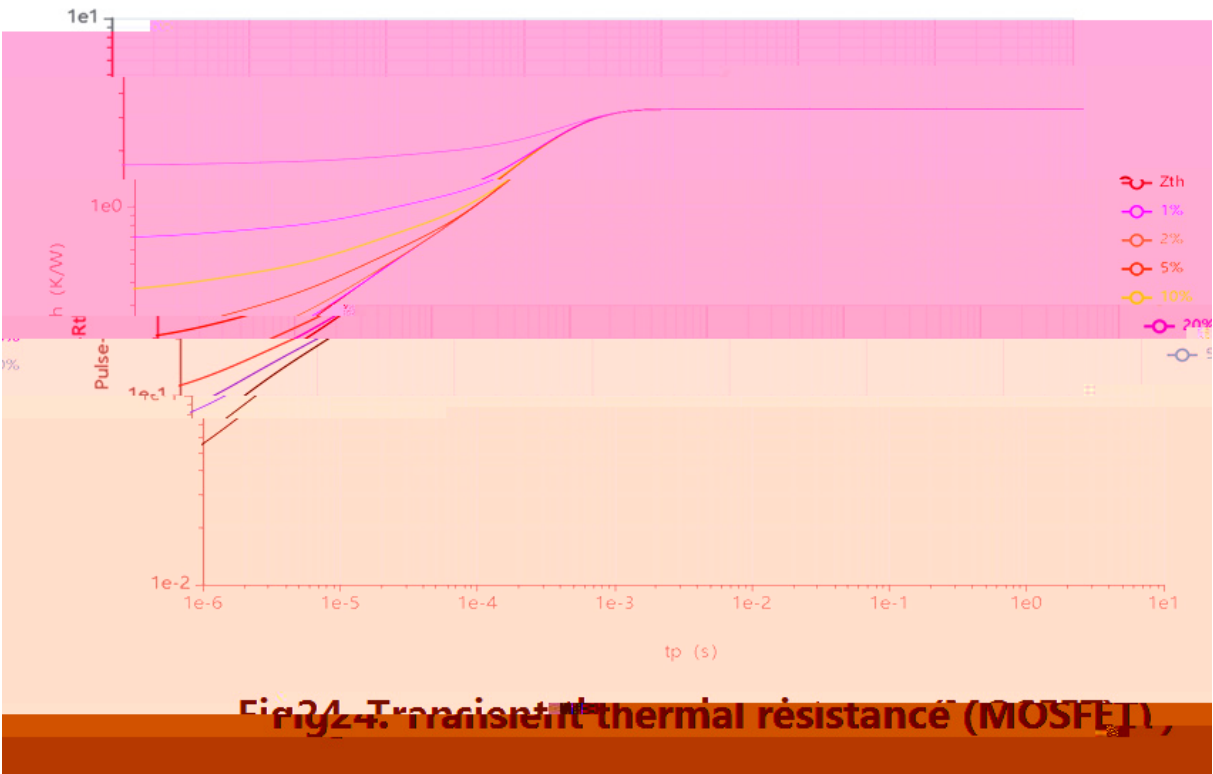
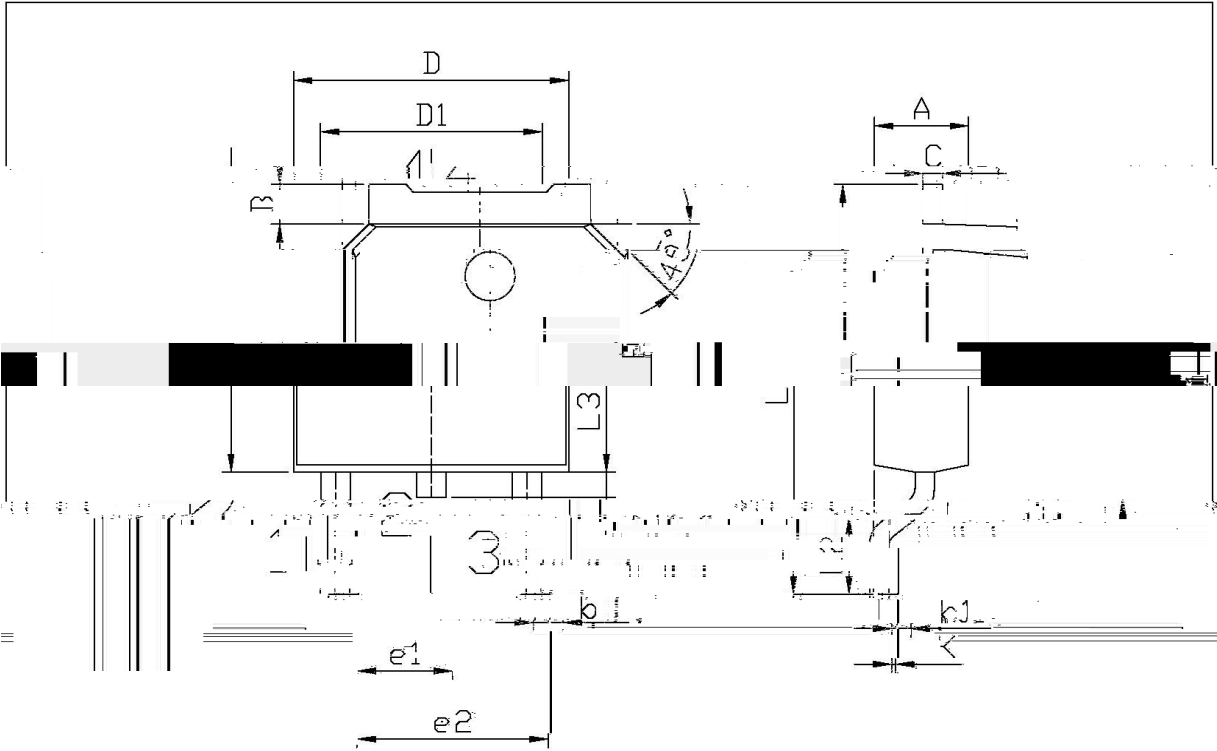


Fig23. Typical capacitance as a function of drain-source voltage

/ Electrical Characteristic Curve



/ Package Dimensions

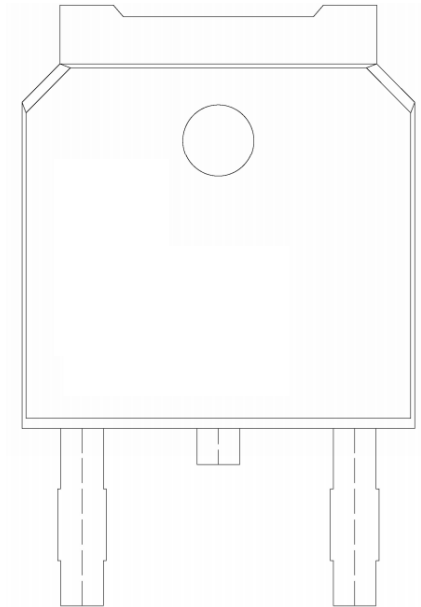


单位: mm

Dimensions In Millimeters			Dimensions In Millimeters		
Symbol	Min	Max	Symbol	Min	Max
A	6.35	7.62	b1	2.20	2.54
B	2.24	2.34	b2	0.95	1.25
C	4.70	5.08	e1	1.27	1.50
D	10.35	11.18	e2	0.45	0.55
D1	9.14	9.52	L3	1.20	1.50
L3	0.60	0.90	L4	6.45	6.75
L4	5.10	5.50	L5	6.10	6.40

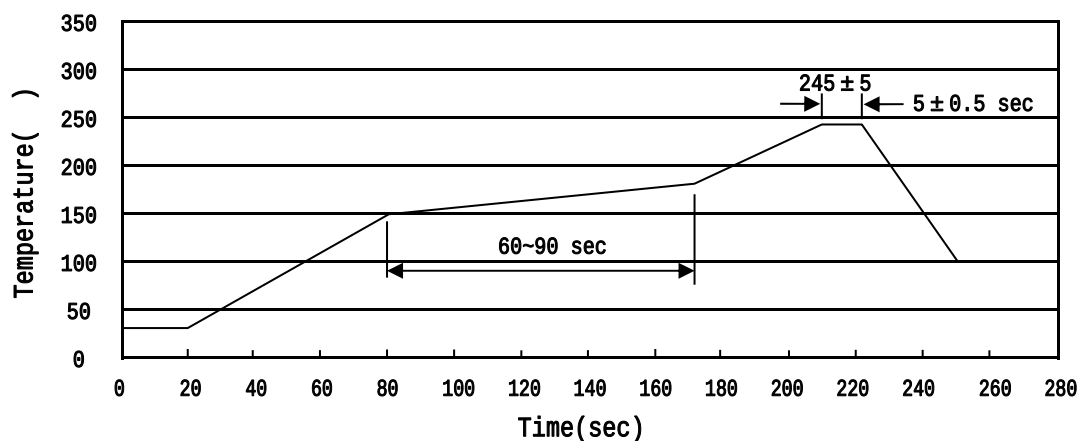
T0-252

/ Marking Instructions





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Note:

- | | | | | | |
|---|-------|-----|----|-----------|---|
| 1 | 150 | 180 | 60 | 90sec; | 1.Preheating:150~180 , Time:60~90sec. |
| 2 | 245±5 | | | 5±0.5sec; | 2.Peak Temp.:245±5 , Duration:5±0.5sec. |
| 3 | | | 2 | 10 /sec. | 3. Cooling Speed: 2~10 /sec. |

/ Resistance to Soldering Heat Test Conditions

260±5

10±1 sec.

Temp.:260±5

Time:10±1 sec

/ Packaging SPEC.

/ REEL

Package Type	Units					Dimension (unit mm ³)		
	Units/Reel /	Reels/Inner Box /	Units/Inner Box /	Inner Boxes/Outer Box /	Units/Outer Box /	Reel	Inner Box	Outer Box
TO-252	2,500	2	5,000	6	30,000	13 ×16	360×360×50	380×335×366

/ TUBE

Package Type	Units					Dimension (unit mm ³)		
	Units/Tube /	Tubes/Inner Box /	Units/Inner Box /	Inner Boxes/Outer Box /	Units/Outer Box /	Tube	Inner Box	Outer Box
TO-251/252	75	48	3,600	5	18,000	526×20.5×5.25	555×164×50	575×290×180

/ Notices

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