

/ Descriptions

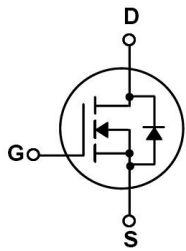
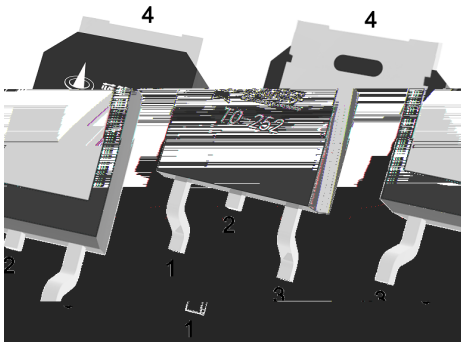
TO-252 SiC N MOS

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

/ Features $V_{DS}=800V$ $I_D=15.4A$ $R_{DS(on)}@15V \leq 280m\Omega$ (Type.215m Ω) $R_{DS(on)}@18V \leq 260m\Omega$ (Type.176m 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.

/ Absolute Maximum Ratings(Tc=25)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	800	V
Continuous DC Drain Current for $R_{th(j-c,typ.)}$, Limited by $T_{VJ(max)}$	$I_D(Tc=25)$	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 $R_{th(j-c,typ.)}$	$P_D(Tc=25)$	65.5	W
Operating and Storage Temperature Range	T_{VJ}, T_{STG}	-55 to 175	
MOSFET/Body Diode Junction-Case Thermal Resistance	$R_{th(j-c)}$	2.29	/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		4	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	m Ω
		$V_{GS}=15V$ $I_D=8A$ $T_{VJ}=175$		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

/ Electrical Characteristics(Tc=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=0/15V$ $L=600\mu H$ $V_{DD}=400V$ $I_D=8A$ $R_g=4.3\Omega$		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		

/ Electrical Characteristic Curve

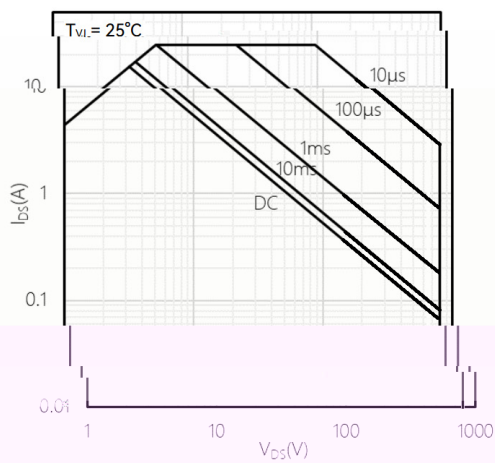


Fig1. Safe operating area (SOA)

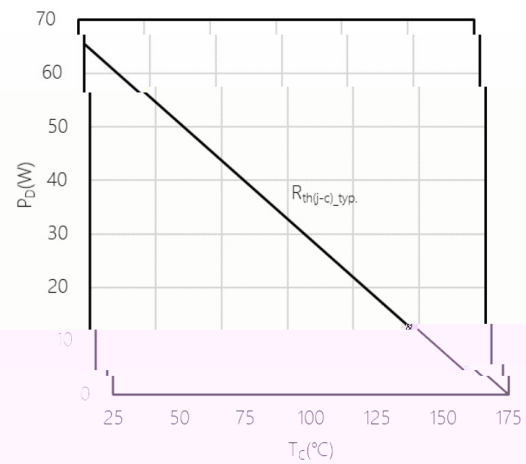
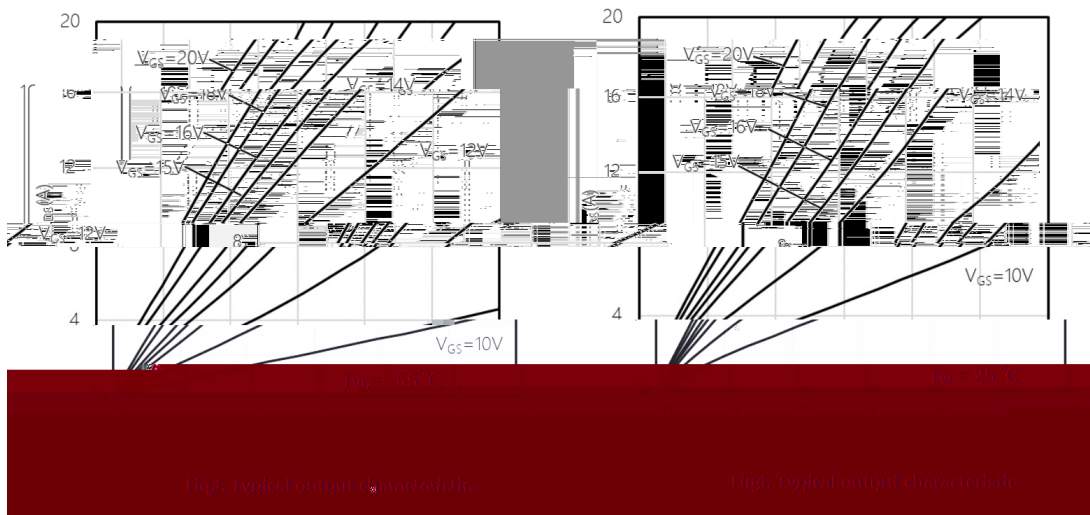
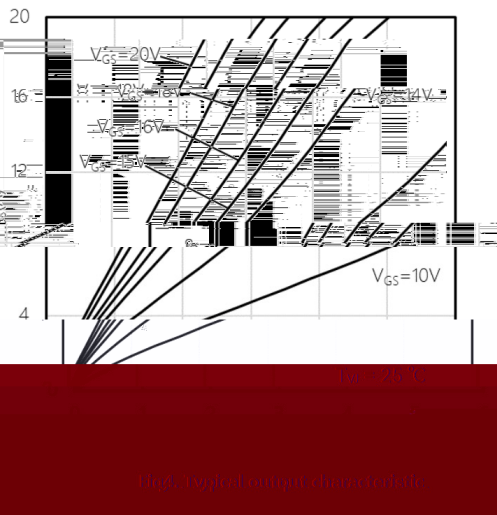


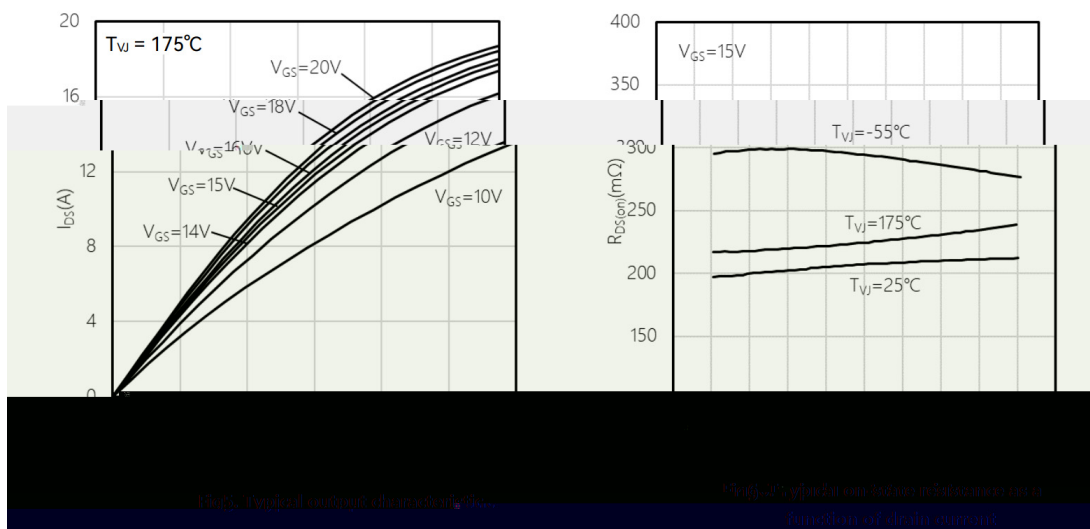
Fig2. Power dissipation



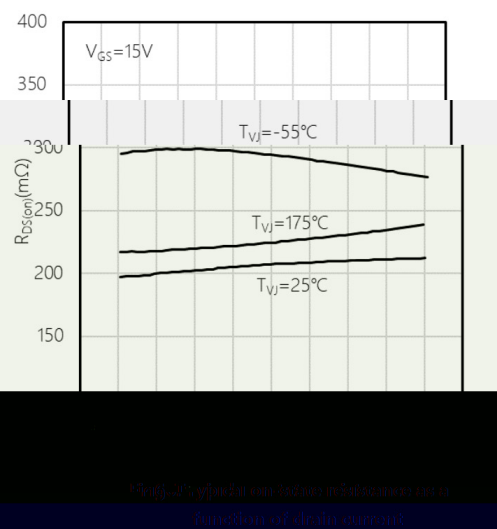
High typical output characteristics



High typical output characteristics



High typical output characteristics

High typical on-resistance characteristics
function of drain current

/ Electrical Characteristic Curve

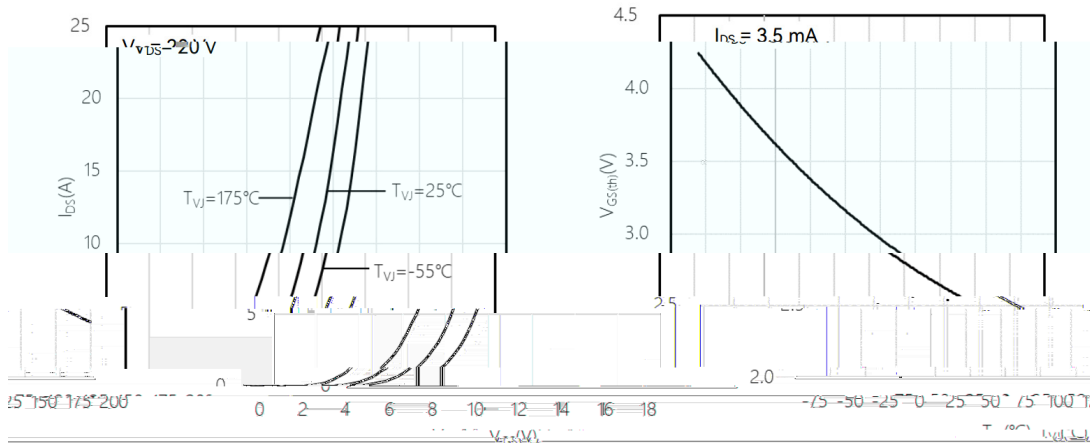
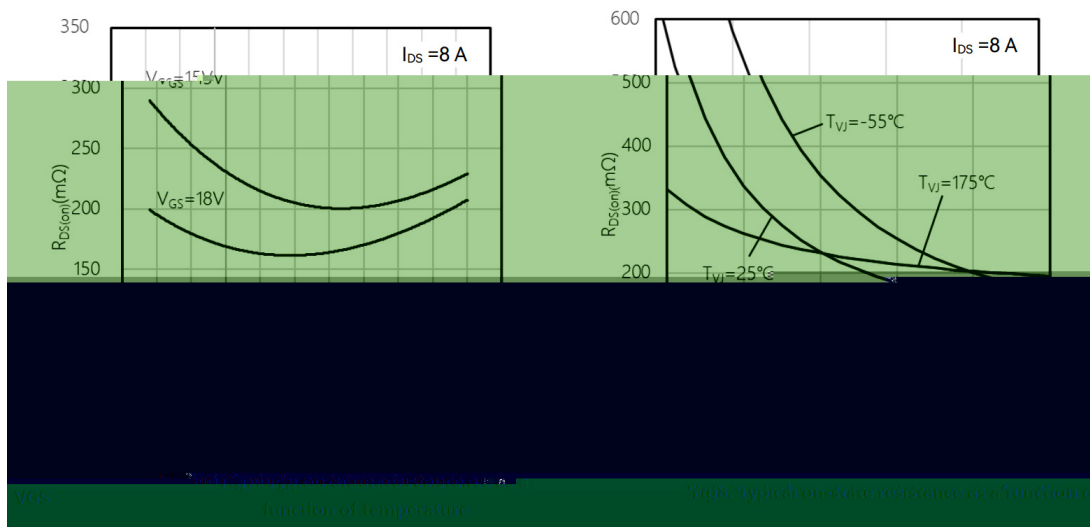


Figure 9 shows the threshold voltage ($V_{GS(th)}$) as a function of temperature (T_{VJ}).

Figure 9. Typical transfer characteristic

Figure 10 shows the threshold voltage ($V_{GS(th)}$) as a function of temperature (T_{VJ}).

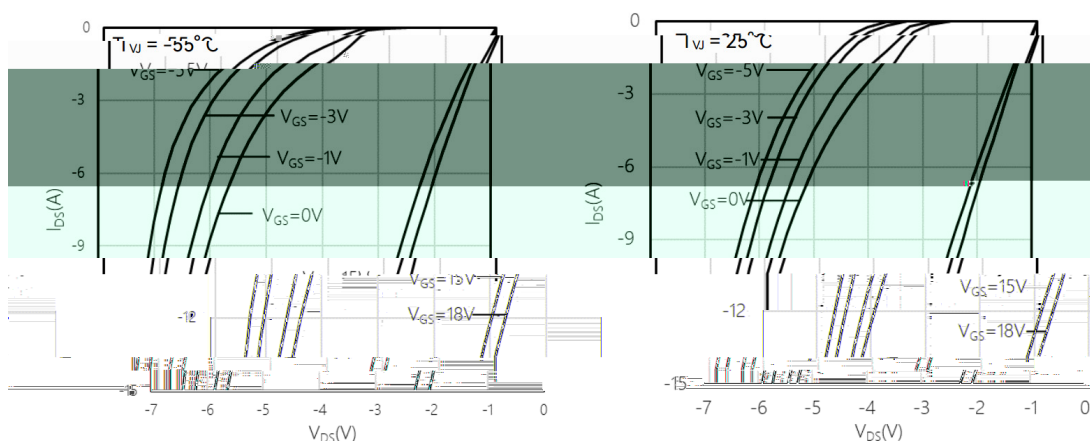
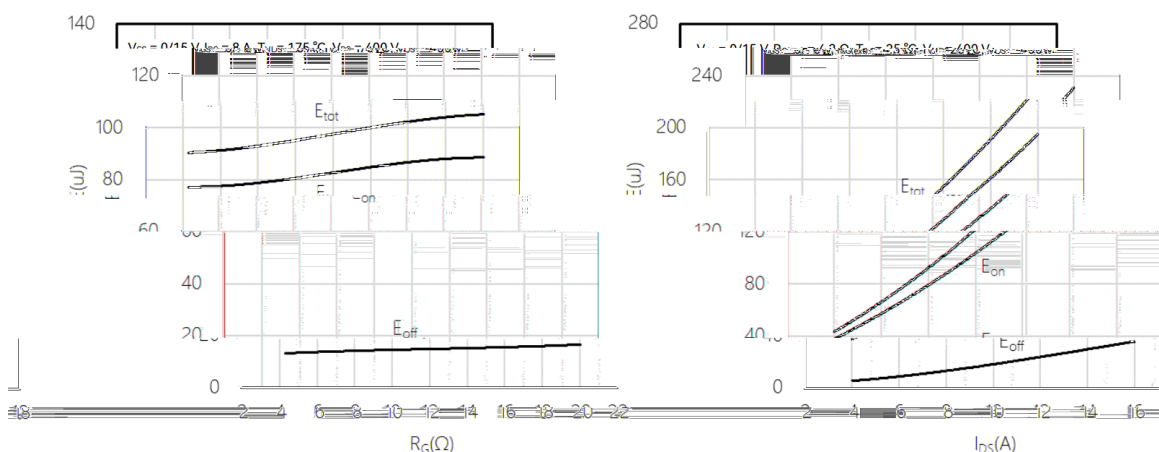
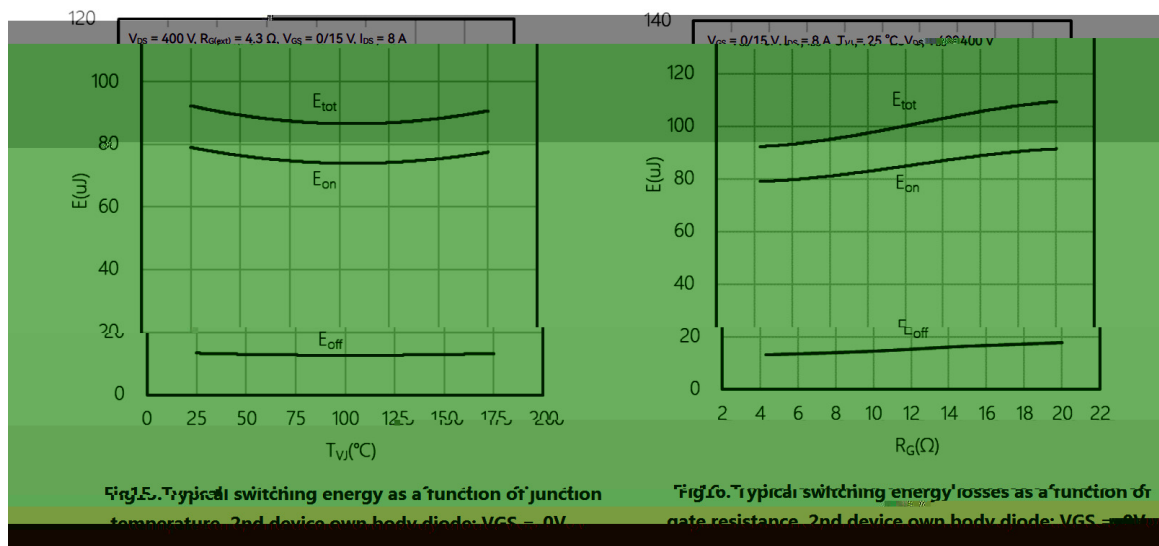
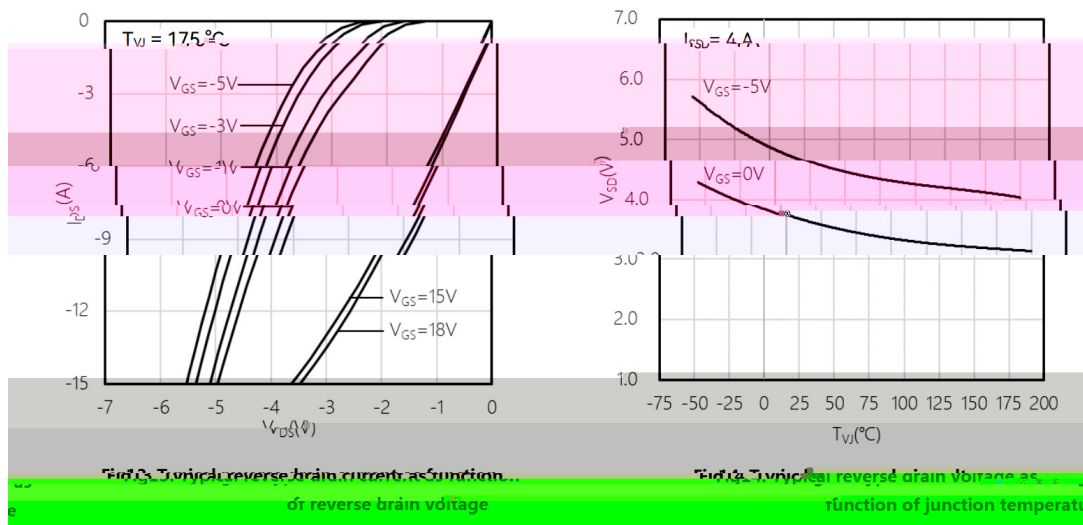


Figure 11 shows the reverse drain current (I_{DS}) as a function of reverse drain voltage (V_{DS}).

Figure 12 shows the reverse drain current (I_{DS}) as a function of reverse drain voltage (V_{DS}).

/ Electrical Characteristic Curve



nction
0V

Fig17. Typical switching energy losses as a function of gate resistance, 2nd device own body diode: $V_{GS} = 0\text{V}$

Fig18. Typical switching energy losses as a function of I_{DS} , 2nd device own body diode: $V_{GS} = 0\text{V}$

/ Electrical Characteristic Curve

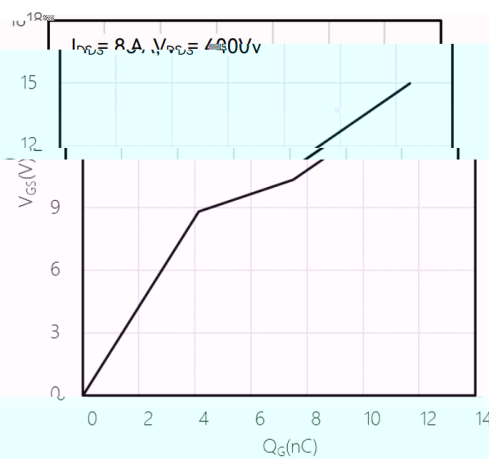
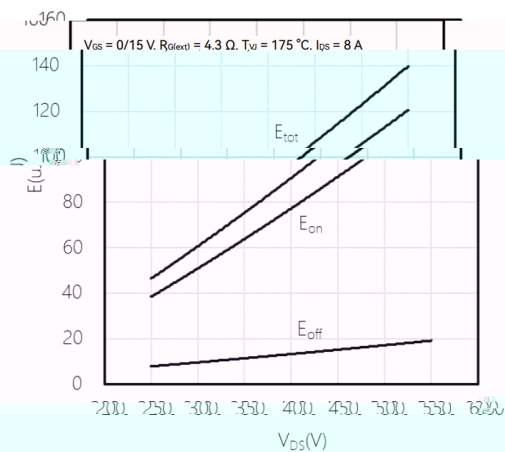
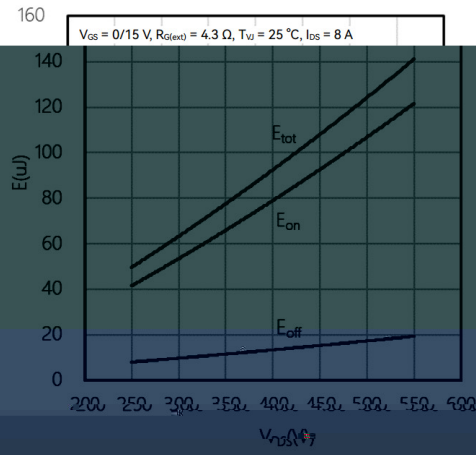
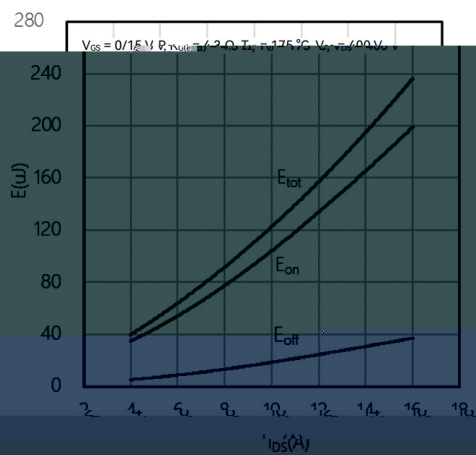


Fig21: Typical switching energy losses as a function of V_{DS} , 2nd device own body diode: $V_{GS} = 0V$

Fig22: Typical gate charge

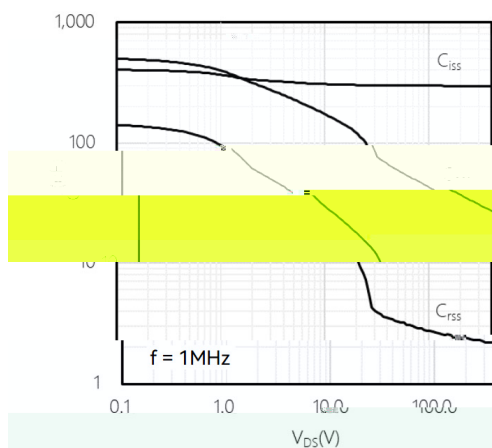
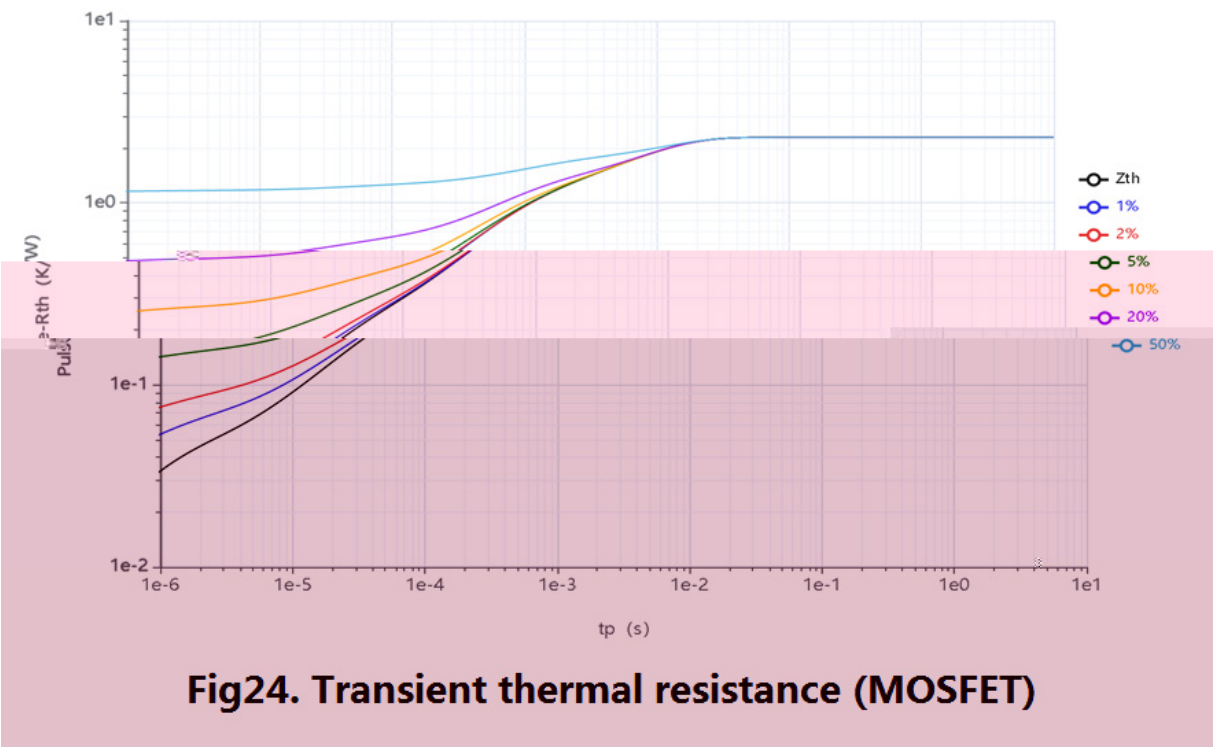
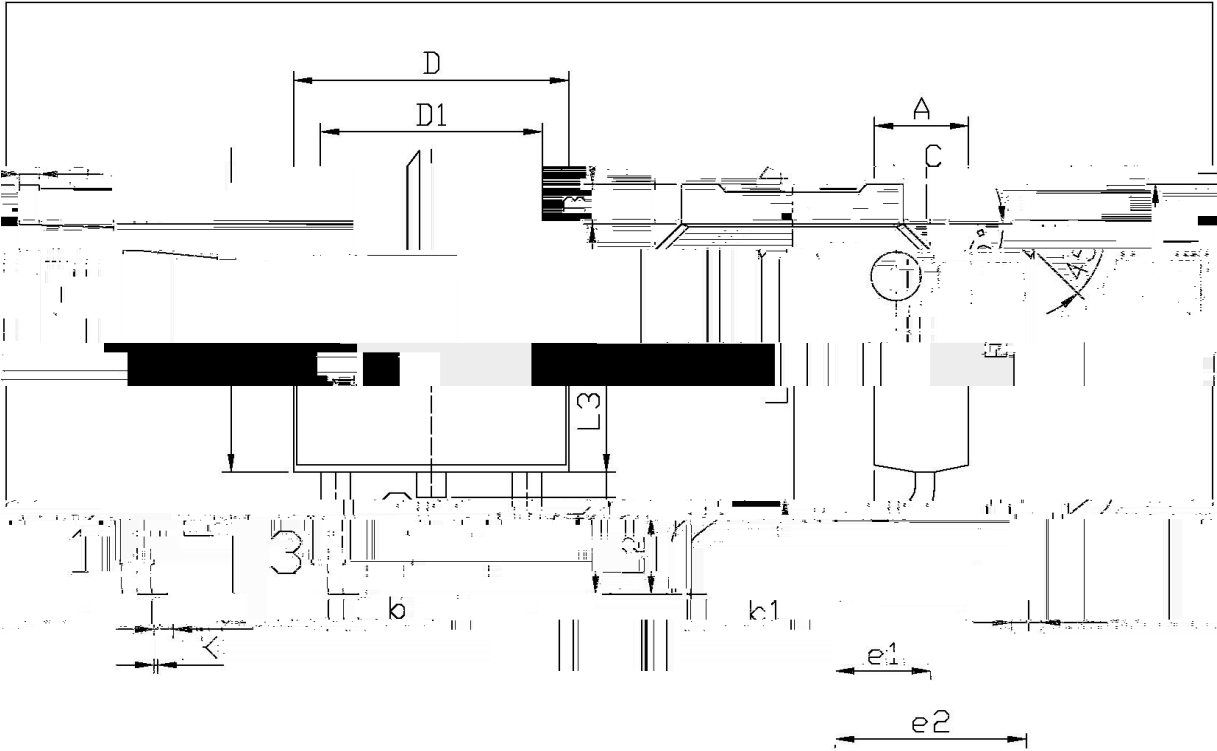


Fig23: Typical capacitance as a function of drain-source voltage

/ Electrical Characteristic Curve

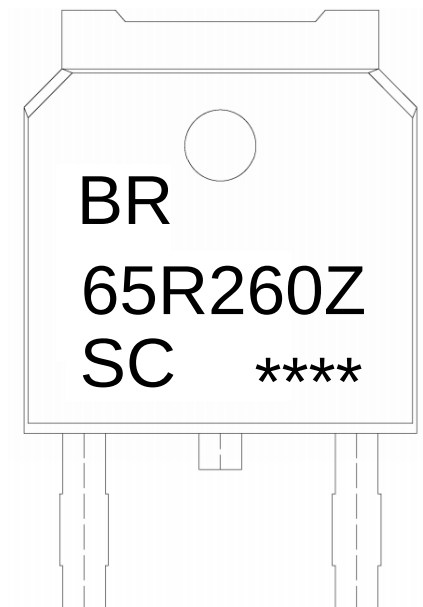


I Package Dimensions



单位: mm					
Symbol		Dimensions In Millimeters		Symbol	
		Min	Max		
0.95	A	0.95	1.25	2.70	B
0.45	C	0.45	0.55	9.85	D
0.60	L3	0.60	0.90	6.45	D1
50	K	0.00	0.10	5.10	e1
0-252				T	

/ Marking Instructions



BR

65R260Z

SC

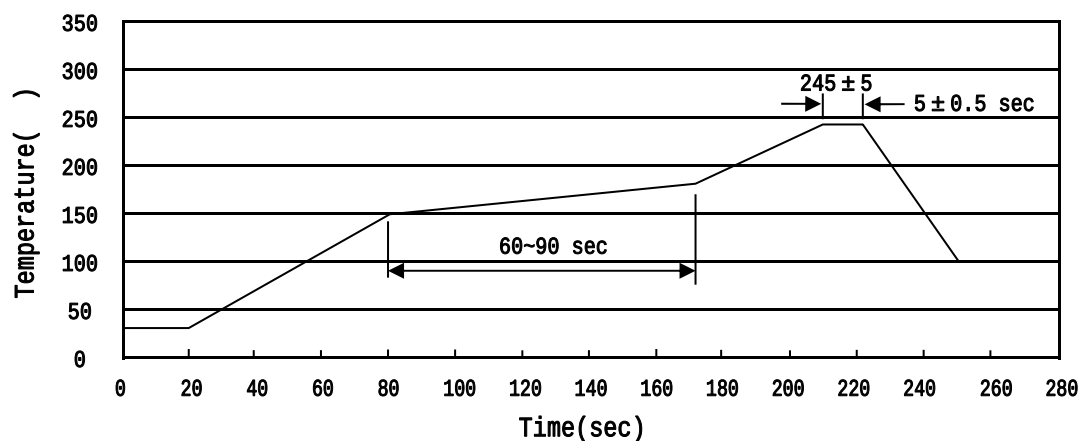
Note:

BR: Company Code

65R260Z: Product Type Code

SC: SiC

****: Lot No. Code, code change with Lot No.

() / Temperature Profile for IR Reflow Soldering(Pb-Free)


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)		
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)		
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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