



## 650V/ 20A Silicon Carbide Power Schottky Barrier Diode

### Features

- Zero reverse recovery current
- Zero forward recovery voltage
- Temperature independent switching behavior
- High temperature operation
- High frequency operation

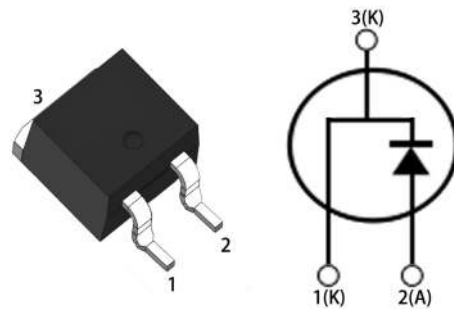
### Benefits

- Unipolar rectifier
- Substantially reduced switching losses
- No thermal run-away with parallel devices
- Reduced heat sink requirements

### Applications

- SMPS, e.g., CCM PFC;
- Motor drives, Solar application, UPS, Wind turbine, Rail traction, EV/HEV

Key Characteristics		
$V_{RRM}$	<b>650</b>	<b>V</b>
$I_F, T_c \leq 157^\circ\text{C}$	<b>20</b>	<b>A</b>
$Q_c$	<b>69</b>	<b>nC</b>



Part No.	Package Type	Marking
GAS06520D	TO-263	GAS06520D

**Maximum Ratings**

Parameter	Symbol	Test Condition	Value	Unit
Repetitive Peak Reverse Voltage	$V_{RRM}$		650	V
Surge Peak Reverse Voltage	$V_{RSM}$		650	V
DC Blocking Voltage	$V_{DC}$		650	V
Continuous Forward Current	$I_F$	$T_C=25^{\circ}C$ $T_C=125^{\circ}C$ $T_C=157^{\circ}C$	79.5 41.5 20	A
Repetitive Peak Forward Surge Current	$I_{FRM}$	$T_C=25^{\circ}C$ , $t_p=10ms$ , Half Sine Wave, $D=0.3$	100	A
Non-repetitive Peak Forward Surge Current	$I_{FSM}$	$T_C=25^{\circ}C$ , $t_p=10ms$ , Half Sine Wave	210	A
Power Dissipation	$P_{TOT}$	$T_C=25^{\circ}C$	288	W
		$T_C=110^{\circ}C$	125	W
Operating Junction	$T_j$		-55°C to 175°C	°C
Storage Temperature	$T_{stg}$		-55°C to 175°C	°C

**Thermal Characteristics**

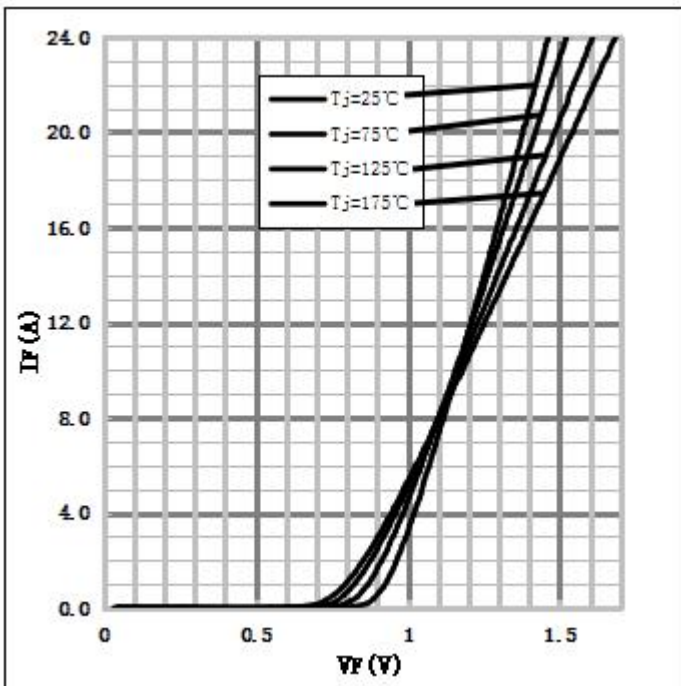
Parameter	Symbol	Test Condition	Value	Unit
			Typ.	
Thermal resistance from junction to case	$R_{th\ JC}$		0.52	°C/W

**Electrical Characteristics**

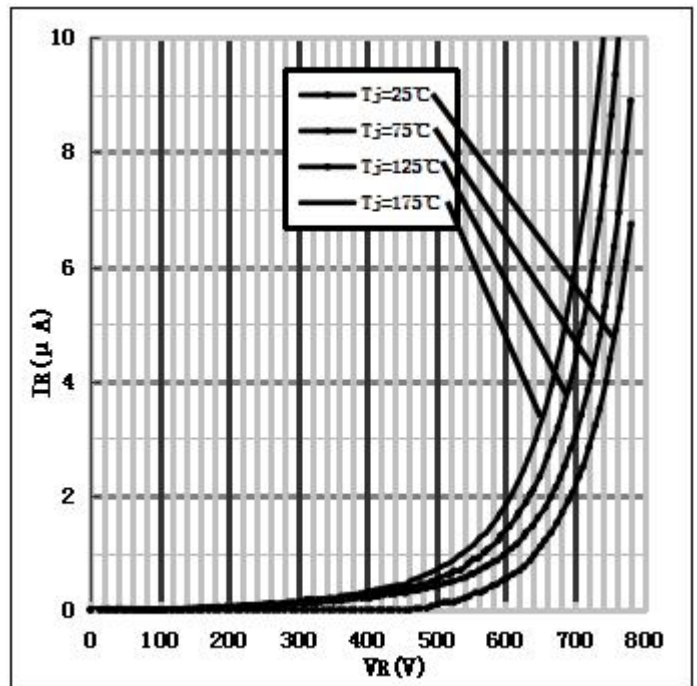
Parameter	Symbol	Test Conditions	Numerical		Unit
			Typ.	Max.	
Forward Voltage	V <sub>F</sub>	I <sub>F</sub> =20A, T <sub>j</sub> =25°C	1.38	1.7	V
		I <sub>F</sub> =20A, T <sub>j</sub> =175°C	1.55	2.0	
Reverse Current	I <sub>R</sub>	V <sub>R</sub> =650V, T <sub>j</sub> =25°C	1	50	uA
		V <sub>R</sub> =650V, T <sub>j</sub> =175°C	5	100	
Total Capacitive Charge	Q <sub>c</sub>	V <sub>R</sub> =400V, T <sub>j</sub> =150°C $Q_c = \int_0^{V_R} C(V)dV$	69	-	nC
Total Capacitance	C	V <sub>R</sub> =0V, T <sub>j</sub> =25°C, f=1MHZ	1390	2000	pF
		V <sub>R</sub> =200V, T <sub>j</sub> =25°C, f=1MHZ	130	170	
		V <sub>R</sub> =400V, T <sub>j</sub> =25°C, f=1MHZ	127	150	

**Performance Graphs**

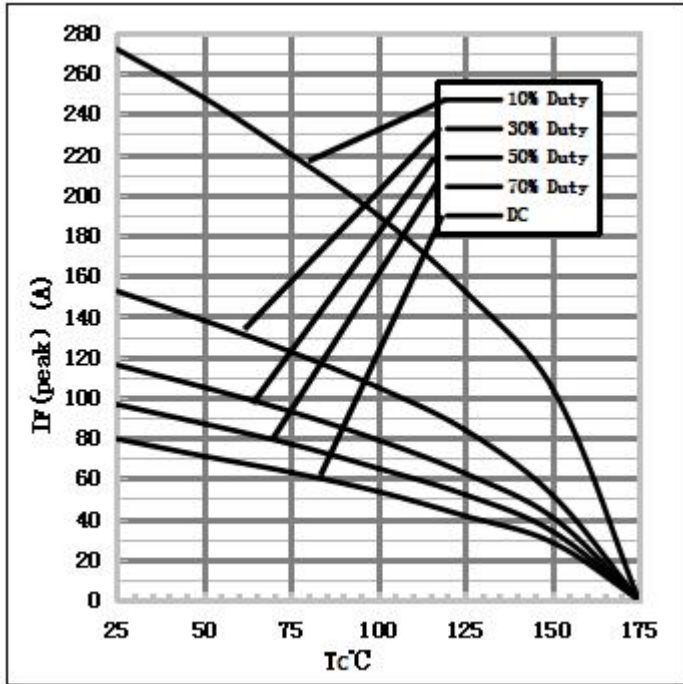
1) Forward IV characteristics as a function of T<sub>j</sub> :



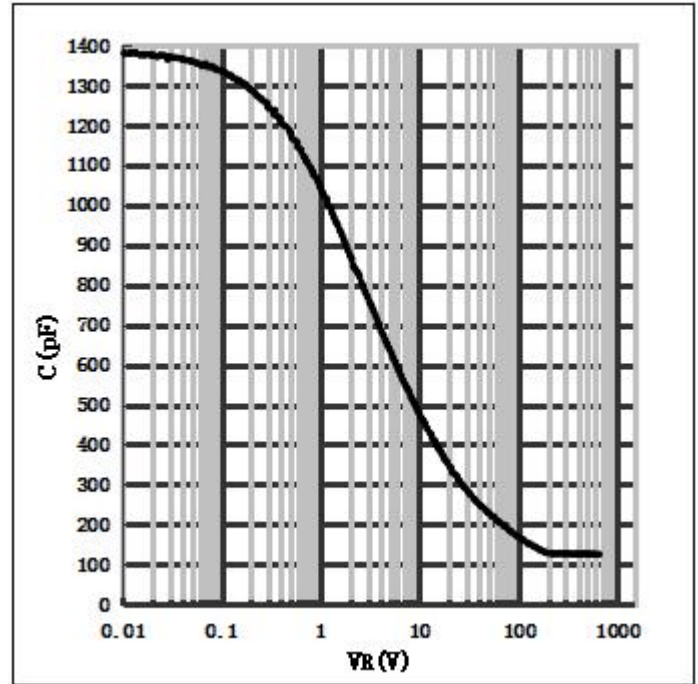
2) Reverse IV characteristics as a function of T<sub>j</sub> :



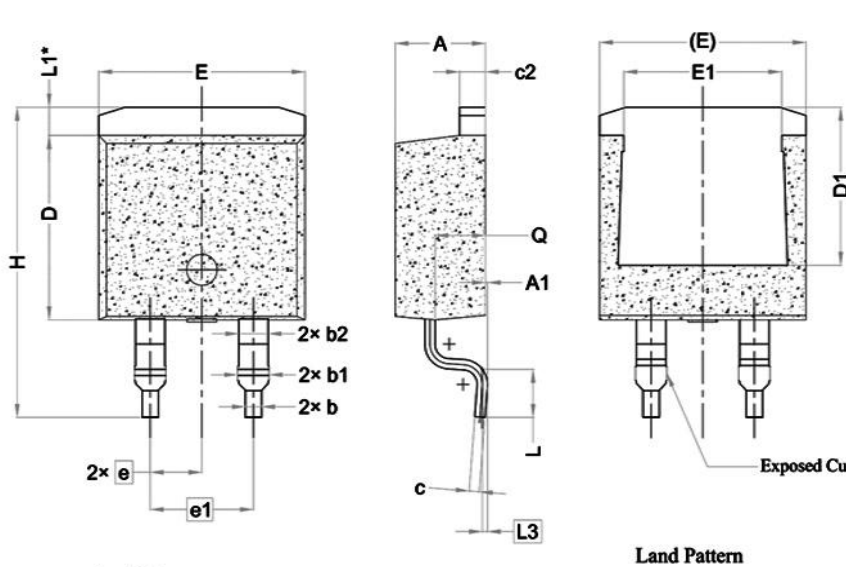
3) Current Derating:



4) Capacitance vs. reverse voltage:



Package TO-263



- Note:
1. All Dimensions Are In mm.
  2. Dimension D & E Do Not Include Mold Flash. Mold Flash Shall Not Exceed 0.127mm Pre Side. These Dimensions Are Measured At The Outermost Extreme Of The Plastic Body.
  3. Thermal Pad Contour Optional Within Dimensions E, L1, D1 & E1.
  4. Dimension D1 & E1 Establish A Minmum Mounting Surface for The Thermal Pad.
  5. "\*" is reference .

单位 : mm

SYMBOL	DIMENSIONS		
	MIN.	NOM.	MAX.
A	4.24	4.44	4.64
A1	0.00	0.10	0.25
b	0.70	0.80	0.90
b1	1.20	1.55	1.75
b2	1.20	1.45	1.70
c	0.40	0.50	0.60
c2	1.15	1.27	1.40
D	8.82	8.92	9.02
D1	6.86	7.65	---
E	9.96	10.16	10.36
E1	6.89	7.77	7.89
e	2.54 BSC		
e1	5.08 BSC		
H	14.61	15.00	15.88
L	1.78	2.32	2.79
L1	1.36 REF.		
L3	0.25 BSC		
Q	2.30	2.48	2.70

**Note:** The levels of RoHS restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU Directive 2011/65/EC(RoHS2). RoHS Certification and other certifications can be obtained from GPT sales representatives or GPT website: <http://globalpowertech.cn/English/index.asp>

**More product datasheets and company information can be found in:**

<http://globalpowertech.cn/English/index.asp>

