

RoHS Compliant Product
A suffix of "-C" specifies halogen-free

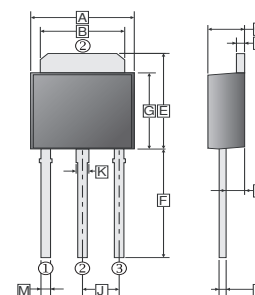
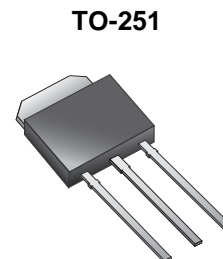
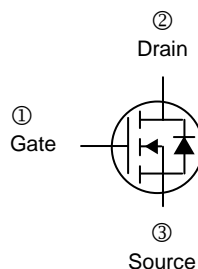
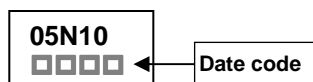
DESCRIPTION

The SID05N10 provide the designer with the best combination of fast switching, The TO-251 package is universally preferred for all commercial-industrial surface mount applications. The device is suited for charger, industrial and consumer environment.

FEATURES

- Low On-resistance
- Fast Switching Speed
- Low-voltage drive (4V)
- Wide SOA (safe operating area)
- Easily designed drive circuits
- Easy to parallel

MARKING:



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	6.40	6.80	G	5.40	5.80
B	5.20	5.50	H	0.90	1.50
C	2.20	2.40	J	2.30	
D	0.45	0.55	K	0.60	0.90
E	6.80	7.20	M	0.50	0.70
F	7.20	7.80	P	0.45	0.60

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	$T_C=25^\circ\text{C}$	5
		$T_C=100^\circ\text{C}$	3.75
Pulsed Drain Current ¹	I_{DM}	20	A
Total Power Dissipation @ $T_C = 25^\circ\text{C}$	P_D	20	W
Thermal Resistance Junction-case	$R_{\theta JC}$	6.25	$^\circ\text{C} / \text{W}$
Thermal Resistance Junction-ambient	$R_{\theta JA}$	110	$^\circ\text{C} / \text{W}$
Linear Derating Factor		0.16	$\text{W} / ^\circ\text{C}$
Operating Junction & Storage temperature	T_J, T_{STG}	-55~150	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ($T_J=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	100	-	-	V	$V_{GS}=0, I_D=1\text{mA}$
Gate Threshold Voltage	$V_{GS(th)}$	1	-	2.5	V	$V_{DS}=10\text{V}, I_D=1\text{mA}$
Forward Trans-conductance	g_{fs}	-	4	-	S	$V_{DS}=10\text{V}, I_D=2.5\text{A}$
Gate-Source Leakage Current	I_{GSS}	-	-	± 100	nA	$V_{GS}=\pm 20\text{V}$
Drain-Source Leakage Current	I_{DSS}	-	-	10	μA	$V_{DS}=100\text{V}, V_{GS}=0$
Static Drain-Source On-Resistance ²	$R_{DS(ON)}$	-	-	170	m Ω	$V_{GS}=10\text{V}, I_D=2.5\text{A}$
		-	-	200		$V_{GS}=4\text{V}, I_D=2.5\text{A}$
Turn-on Delay Time ²	$T_{d(on)}$	-	9	-	nS	$V_{DD}=30\text{V}$ $I_D=1\text{A}$ $V_{GS}=10\text{V}$ $R_G=6\Omega$ $R_L=30\Omega$
Rise Time	T_r	-	9.4	-		
Turn-off Delay Time	$T_{d(off)}$	-	26.8	-		
Fall Time	T_f	-	2.6	-		
Input Capacitance	C_{iss}	-	975	-	pF	$V_{GS}=0$ $V_{DS}=25\text{V}$ $f=1\text{MHz}$
Output Capacitance	C_{oss}	-	38	-		
Reverse Transfer Capacitance	C_{rss}	-	27	-		
Source-Drain Diode						
Forward On Voltage ²	V_{SD}	-	-	1.5	V	$I_S=5\text{A}, V_{GS}=0, T_J=25^\circ\text{C}$

Notes:

1. Pulse width limited by maximum junction temperature.
2. Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$

CHARACTERISTIC CURVES

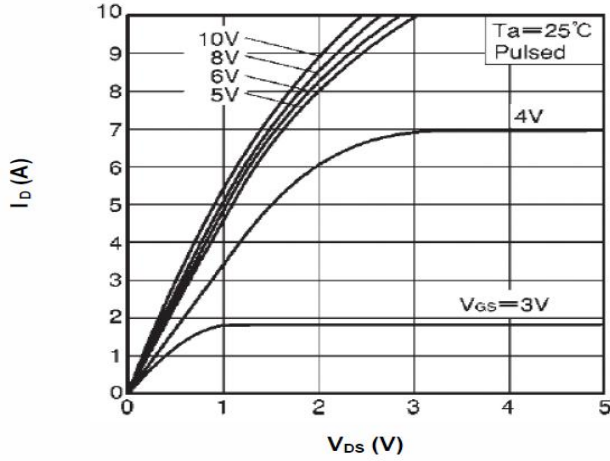


Fig 1. Typical Output Characteristics

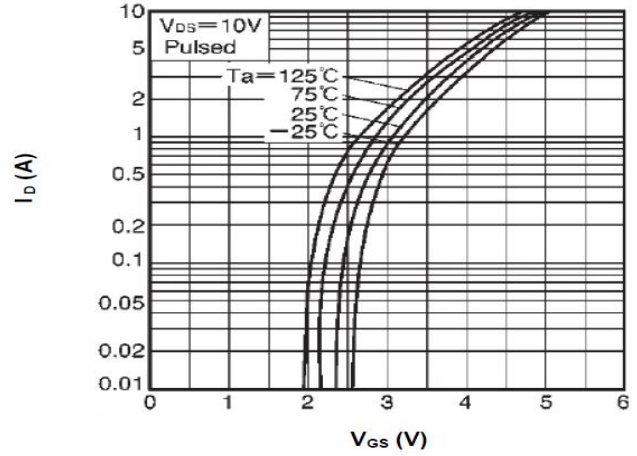


Fig 2. Transfer Characteristics

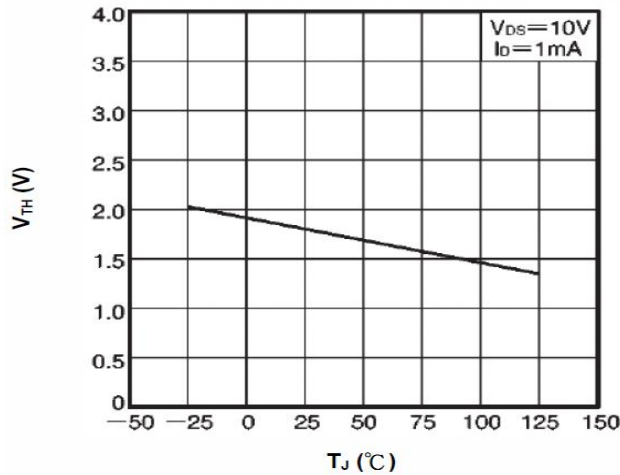


Fig 3. Gate Threshold Voltage vs. Junction Temperature

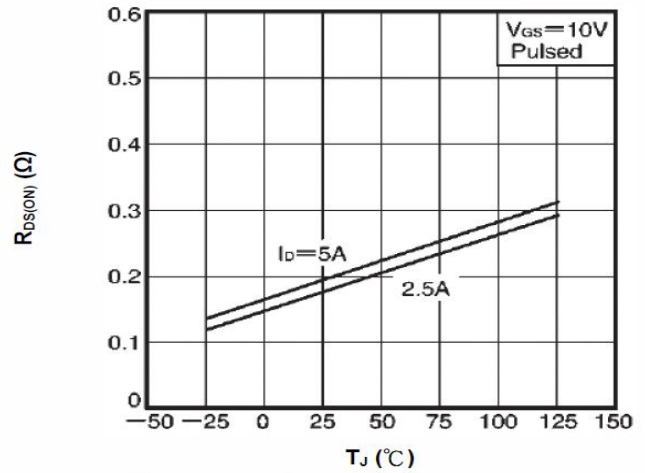


Fig 4. On-Resistance vs. Junction Temperature

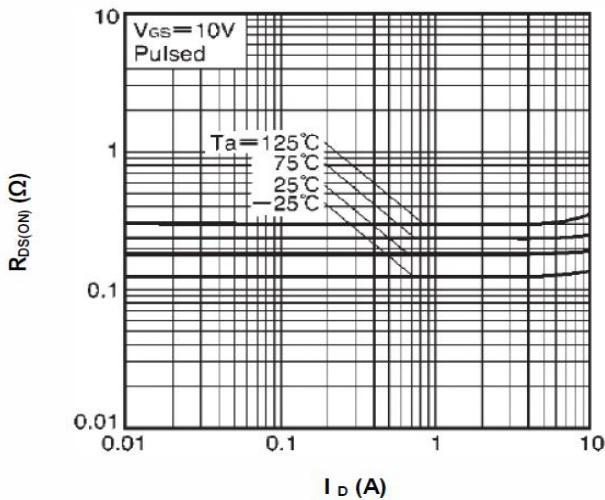


Fig 5. On-Resistance vs. Drain Current (I)

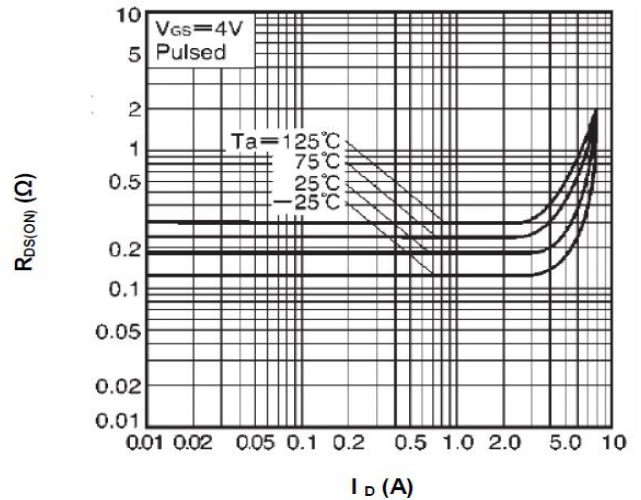


Fig 6. On-Resistance vs. Drain Current (II)

CHARACTERISTIC CURVES

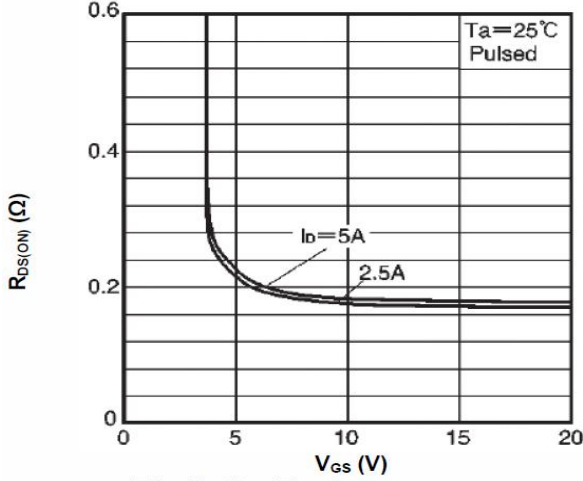


Fig 7. On-Resistance vs. Gate-Source Voltage

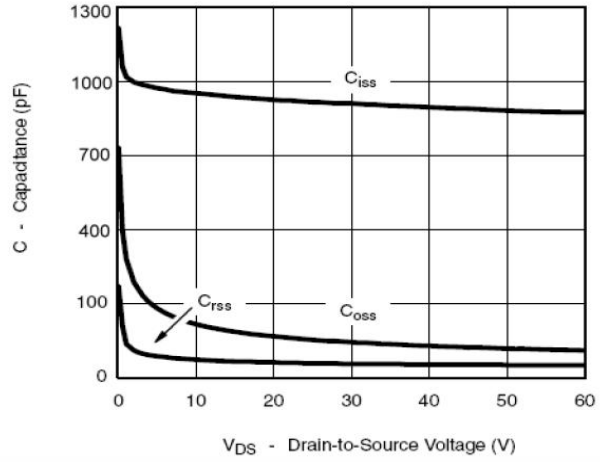


Fig 8. Typical Capacitance Characteristics

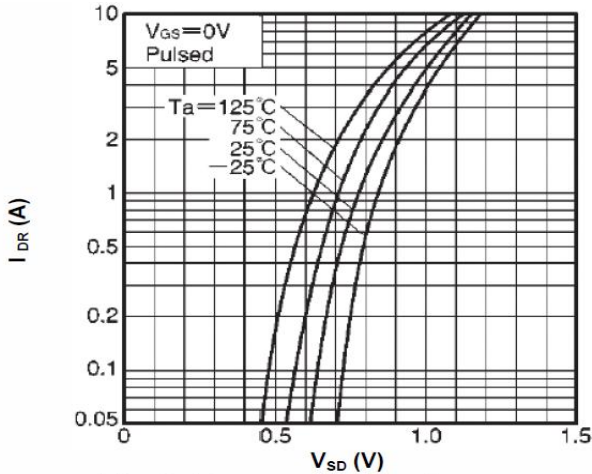


Fig 9. Reverse Drain Current vs. Source-Drain Voltage (I)

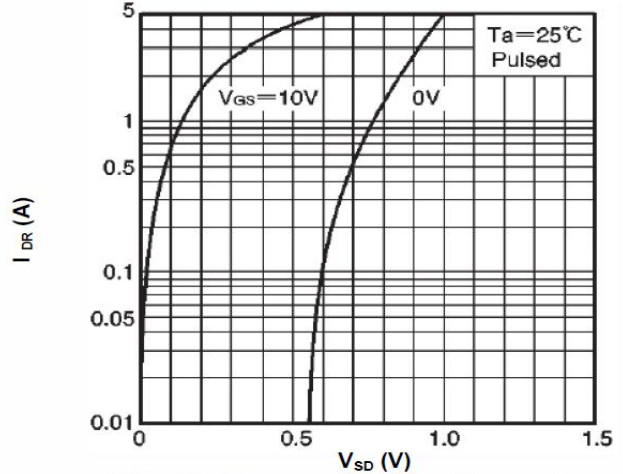


Fig 10. Reverse Drain Current vs. Source-Drain Voltage (II)

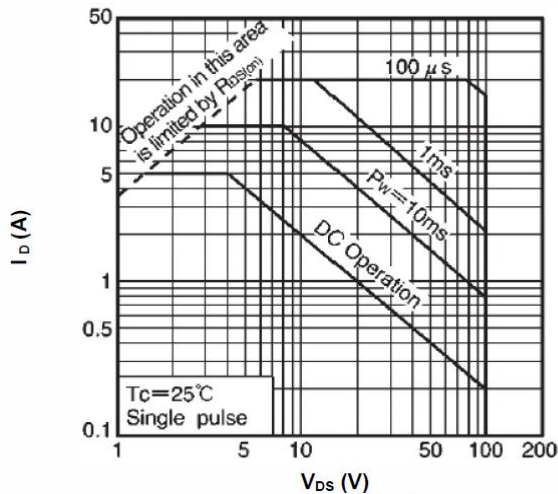


Fig 11. Maximum Safe Operating Area

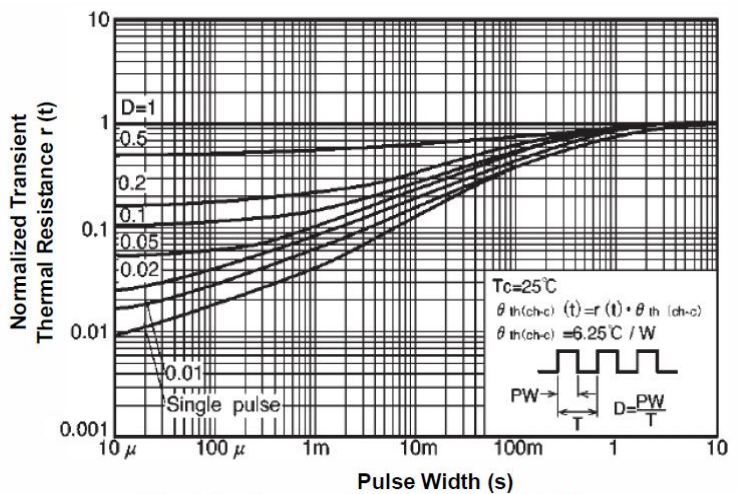


Fig 12. Normalized Transient Thermal Resistance vs. Pulse Width