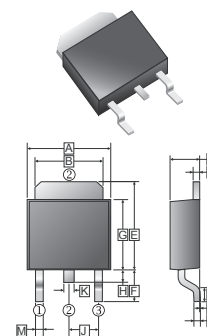


RoHS Compliant Product
A suffix of "-C" specifies halogen free

DESCRIPTION

The SSD2504 provide the designer with the best combination of fast switching. The TO-252 package is universally preferred for all commercial-industrial surface mount applications. The device is suited for charger, industrial and consumer environment.

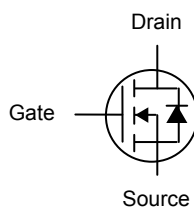
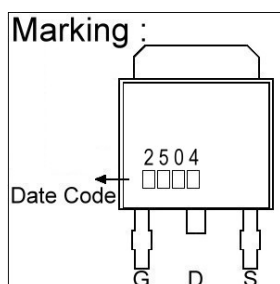
TO-252(D-Pack)



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	6.4	6.8	J	2.30	REF.
B	5.20	5.50	K	0.70	0.90
C	2.20	2.40	M	0.50	1.1
D	0.45	0.58	N	0.9	1.6
E	6.8	7.3	O	0	0.15
F	2.40	3.0	P	0.43	0.58
G	5.40	6.2			
H	0.8	1.20			

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	$I_D @ T_C=25^\circ\text{C}$	5.0	A
	$I_D @ T_C=100^\circ\text{C}$	3.75	A
Pulsed Drain Current ¹	I_{DM}	20	A
Total Power Dissipation	$P_D @ T_C=25^\circ\text{C}$	20	W
Linear Derating Factor		0.16	W / $^\circ\text{C}$
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 ~ 150	$^\circ\text{C}$
THERMAL DATA			
Maximum Thermal Resistance Junction-Ambient ^a	$R_{\theta JA}$	110	$^\circ\text{C} / \text{W}$
Maximum Thermal Resistance Junction-Case	$R_{\theta JC}$	6.25	$^\circ\text{C} / \text{W}$

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	$V_{GS(th)}$	1.0	-	2.5	V	$V_{DS} = 10\text{V}, I_D = 1\text{mA}$
Forward Transconductance	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	$V_{DS} = 100\text{V}, V_{GS} = 0\text{V}$
Static Drain-Source On-Resistance ²	$R_{DS(ON)}$	-	-	0.22	Ω	$V_{GS} = 10\text{V}, I_D = 2.5\text{A}$
		-	-	0.28		$V_{GS} = 4.0\text{V}, I_D = 2.5\text{A}$
Turn-on Delay Time ²	$T_{d(on)}$	-	9.0	-	nS	$V_{DD} = 30\text{V}$ $I_D = 1\text{A}$ $V_{GS} = 10\text{V}$ $R_L = 30\Omega$ $R_G = 6\Omega$
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	$V_{GS} = 0\text{V}$ $V_{DS} = 25\text{V}$ $f = 1\text{MHz}$
Output Capacitance	C_{OSS}	-	38	-		
Reverse Transfer Capacitance	C_{RSS}	-	27	-		
SOURCE-DRAIN DIODE						
Diode Forward Voltage ²	V_{SD}	-	-	1.5	V	$I_S = 5\text{A}, V_{GS} = 0\text{V}$

Notes :

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

CHARACTERISTIC CURVES

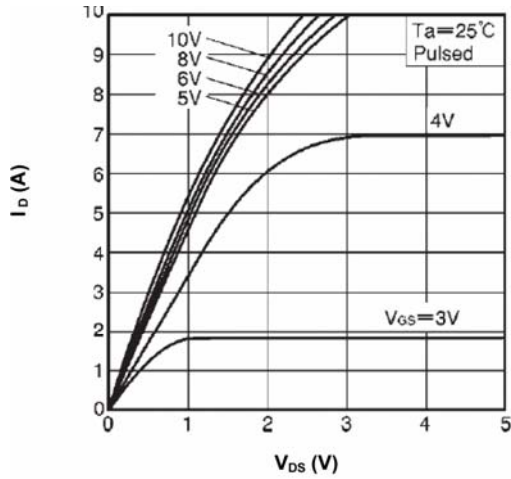


Fig 1. Typical Output Characteristics

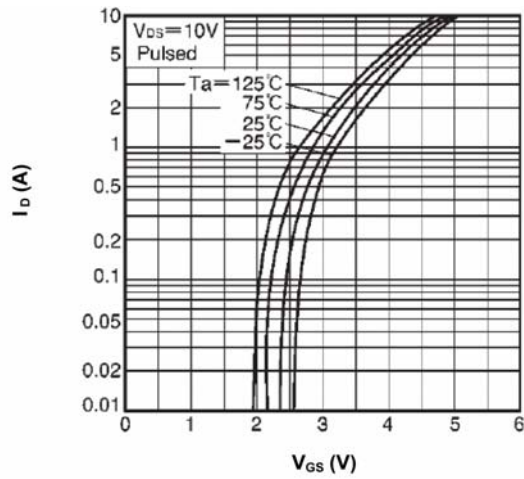


Fig 2. Transfer Characteristics

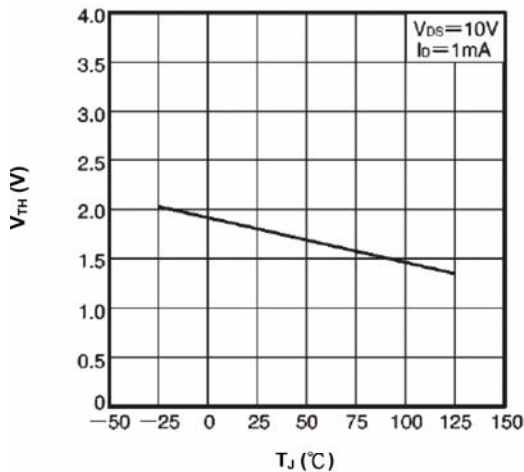


Fig 3. Gate Threshold Voltage vs. Junction Temperature

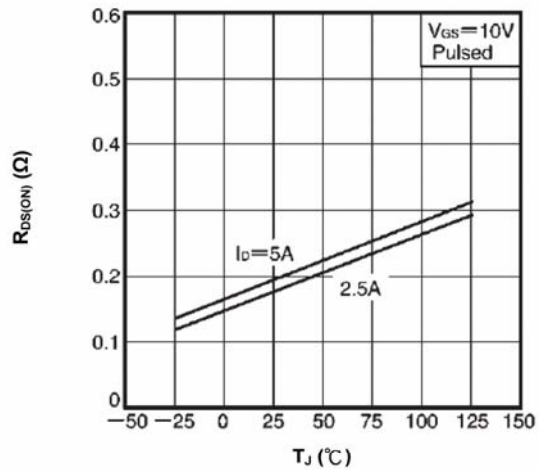


Fig 4. On-Resistance vs. Junction Temperature

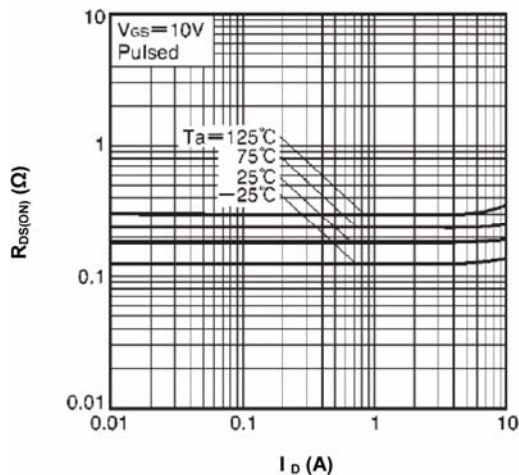


Fig 5. On-Resistance vs. Drain Current (I)

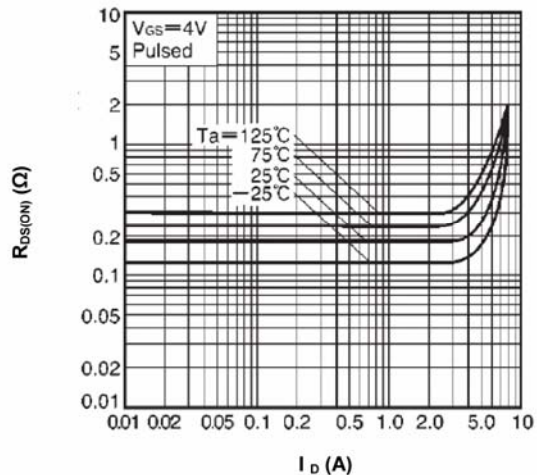


Fig 6. On-Resistance vs. Drain Current (II)

CHARACTERISTIC CURVES

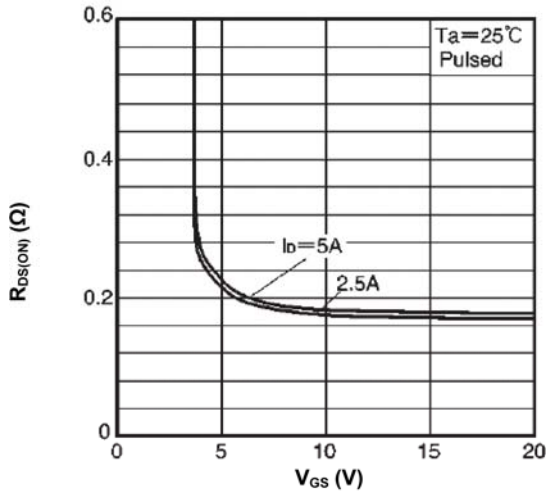


Fig 7. On-Resistance vs. Gate-Source Voltage

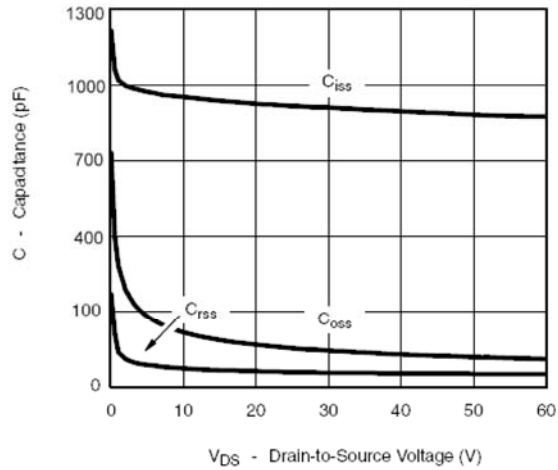


Fig 8. Typical Capacitance Characteristics

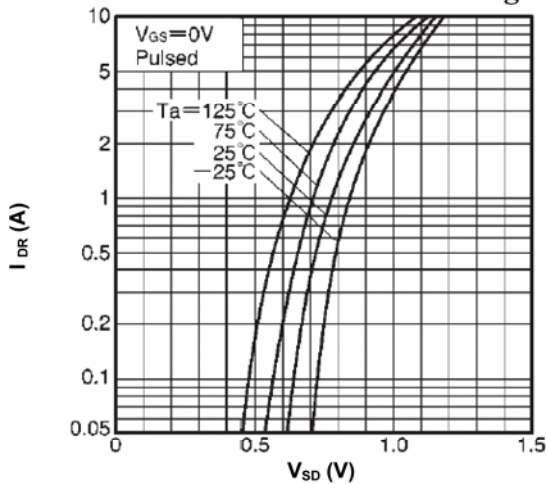


Fig 9. Reverse Drain Current vs. Source-Drain Voltage (I)

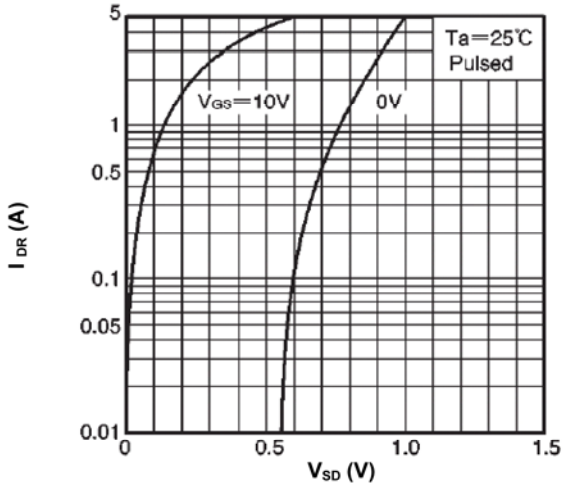


Fig 10. Reverse Drain Current vs. Source-Drain Voltage (II)

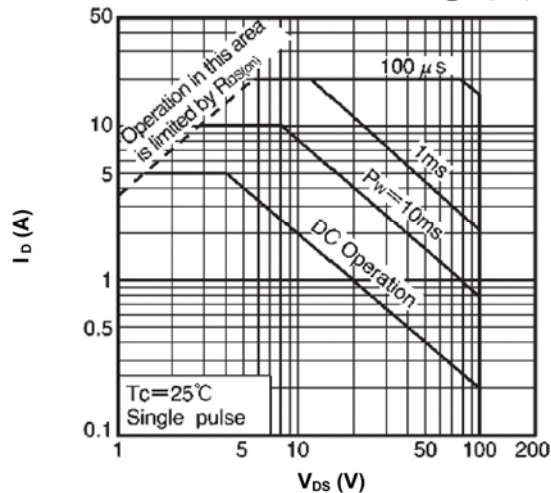


Fig 11. Maximum Safe Operating Area

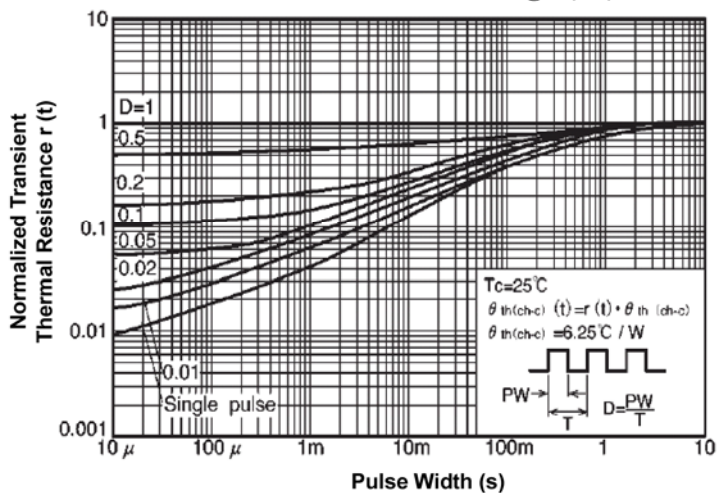


Fig 12. Normalized Transient Thermal Resistance vs. Pulse Width