

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

### KEY FEATURES

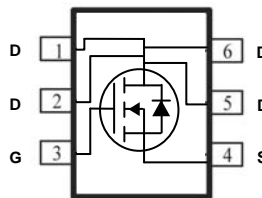
- Low  $R_{DS(on)}$  trench technology.
- Low thermal impedance.
- Fast switching speed.

### TYPICAL APPLICATIONS

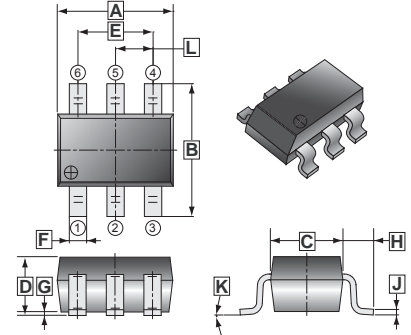
- White LED boost converters.
- Automotive Systems
- Industrial DC/DC Conversion Circuits

### PRODUCT SUMMARY

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$V_{DS}(V)$	$R_{DS(on)}$ (m $\Omega$ )	$I_D(A)$
150	700@ $V_{GS}=10V$	1.2
	1200@ $V_{GS}=4.5V$	1



### TSOP-6



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.70	3.10	G	0	0.10
B	2.60	3.00	H	0.60	REF.
C	1.40	1.80	J	0.12	REF.
D	1.10	MAX.	K	0°	10°
E	1.90	REF.	L	0.95	REF.
F	0.30	0.50			

### ABSOLUTE MAXIMUM RATINGS( $T_A=25^\circ C$ UNLESS OTHERWISE NOTED)

Parameter	Symbol	Ratings	Unit
		Maximum	
Drain-Source Voltage	$V_{DS}$	150	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current <sup>a</sup>	$I_D$	$T_A=25^\circ C$	1.2
		$T_A=70^\circ C$	1
Pulsed Drain Current <sup>b</sup>	$I_{DM}$	$\pm 10$	A
Continuous Source Current (Diode Conduction) <sup>a</sup>	$I_S$	2.5	A
Power Dissipation <sup>a</sup>	$P_D$	$T_A=25^\circ C$	2
		$T_A=70^\circ C$	1.3
Operating Junction and Storage Temperature Range	$T_j, T_{stg}$	-55 ~ 150	$^\circ C$

### THERMAL RESISTANCE RATINGS

Parameter	Symbol	Maximum	Unit
Maximum Junction to Ambient <sup>a</sup>	$R_{\theta JA}$	$t \leq 10$ sec	62.5
		Steady State	110

#### Notes

- Surface Mounted on 1" x 1" FR4 Board.
- Pulse width limited by maximum junction temperature.

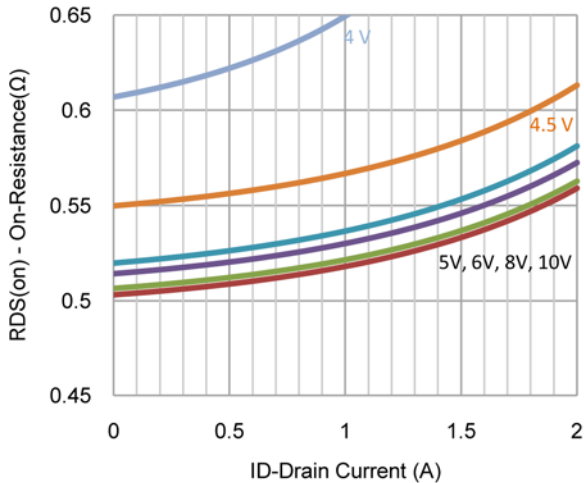
**ELECTRICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Gate-Threshold Voltage	$V_{GS(th)}$	1	-	3.5	V	$V_{DS}=V_{GS}$ , $I_D=250\mu\text{A}$
Gate-Body Leakage	$I_{GSS}$	-	-	$\pm 100$	$\mu\text{A}$	$V_{DS}=0\text{V}$ , $V_{GS}=\pm 20\text{V}$
Zero Gate Voltage Drain Current	$I_{DSS}$	-	-	1	$\mu\text{A}$	$V_{DS}=120\text{V}$ , $V_{GS}=0\text{V}$
		-	-	10		$V_{DS}=120\text{V}$ , $V_{GS}=0\text{V}$ , $T_J=55^\circ\text{C}$
On-State Drain Current <sup>a</sup>	$I_{D(on)}$	10	-	-	A	$V_{DS}=5\text{V}$ , $V_{GS}=10\text{V}$
Drain-Source On-Resistance <sup>a</sup>	$R_{DS(ON)}$	-	-	700	m $\Omega$	$V_{GS}=10\text{V}$ , $I_D=1.2\text{A}$
		-	-	1200		$V_{GS}=4.5\text{V}$ , $I_D=1\text{A}$
Forward Transconductance <sup>a</sup>	$g_{fs}$	-	11	-	S	$V_{DS}=15\text{V}$ , $I_D=1.2\text{A}$
Diode Forward Voltage <sup>a</sup>	$V_{SD}$	-	0.8	-	V	$I_S=1.25\text{A}$ , $V_{GS}=0\text{V}$
<b>DYNAMIC <sup>b</sup></b>						
Total Gate Charge	$Q_g$	-	2.5	-	nC	$V_{DS}=10\text{V}$ , $V_{GS}=4.5\text{V}$ , $I_D=1\text{A}$
Gate-Source Charge	$Q_{gs}$	-	1	-		
Gate-Drain Charge	$Q_{gd}$	-	0.8	-		
Turn-on Delay Time	$T_{d(on)}$	-	5	-	nS	$V_{DD}=10\text{V}$ , $V_{GEN}=10\text{V}$ , $R_L=10\Omega$ , $I_D=1\text{A}$ , $R_{GEN}=6\Omega$
Rise Time	$T_r$	-	5	-		
Turn-off Delay Time	$T_{d(off)}$	-	6	-		
Fall Time	$T_f$	-	4	-		
Input Capacitance	$C_{iss}$	-	320	-	pF	$V_{DS}=15\text{V}$ , $V_{GS}=0\text{V}$ , $f=1\text{MHz}$
Output Capacitance	$C_{oss}$	-	37	-		
Reverse Transfer Capacitance	$C_{rss}$	-	20	-		

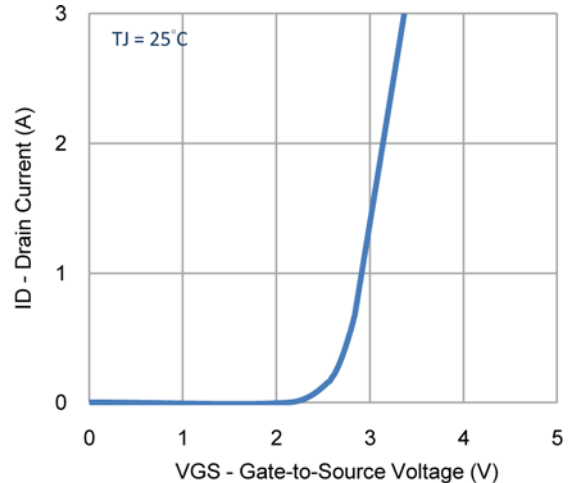
Notes

- a. Pulse test :  $PW \leq 300 \mu\text{s}$  duty cycle  $\leq 2\%$ .
- b. Guaranteed by design, not subject to production testing.

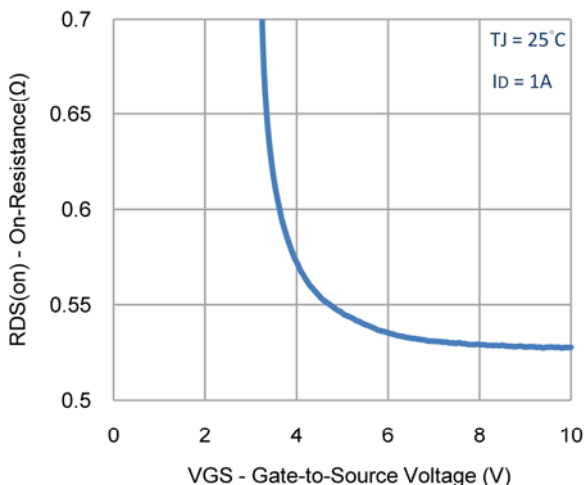
**CHARACTERISTIC CURVES**



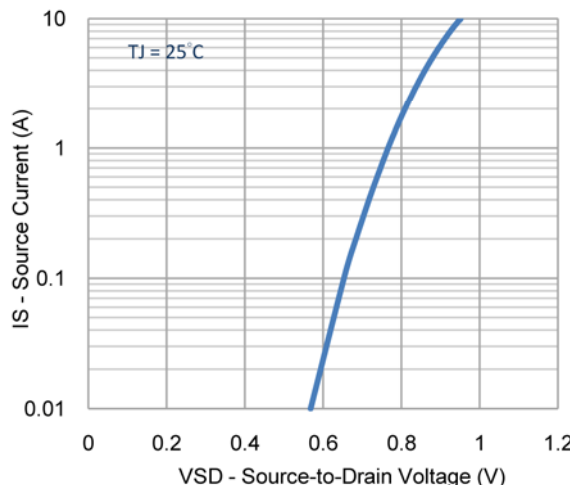
**1. On-Resistance vs. Drain Current**



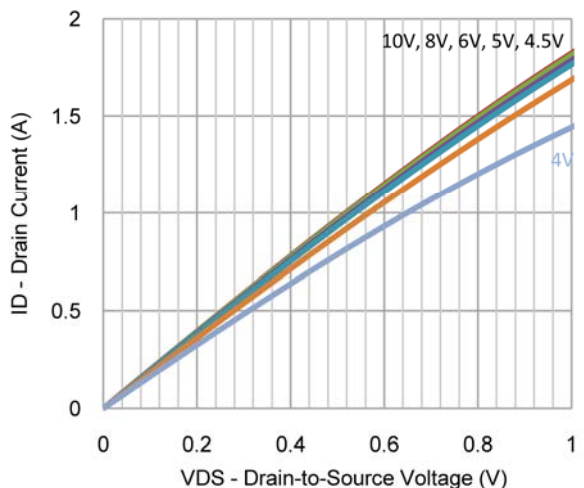
**2. Transfer Characteristics**



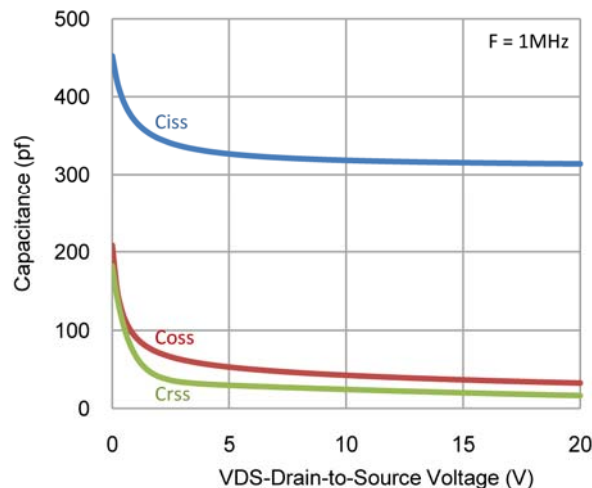
**3. On-Resistance vs. Gate-to-Source Voltage**



**4. Drain-to-Source Forward Voltage**

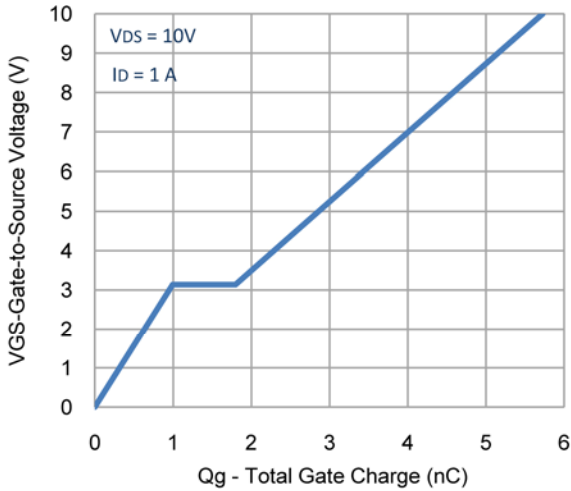


**5. Output Characteristics**

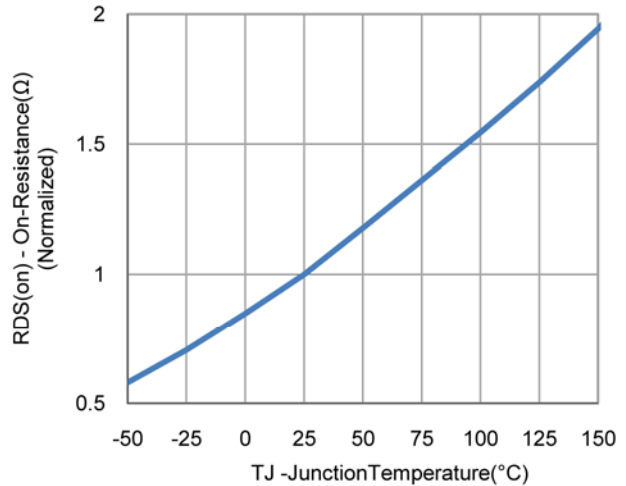


**6. Capacitance**

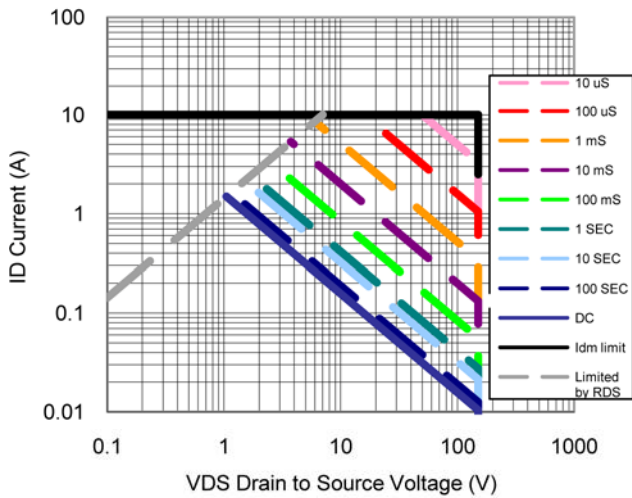
**CHARACTERISTIC CURVES**



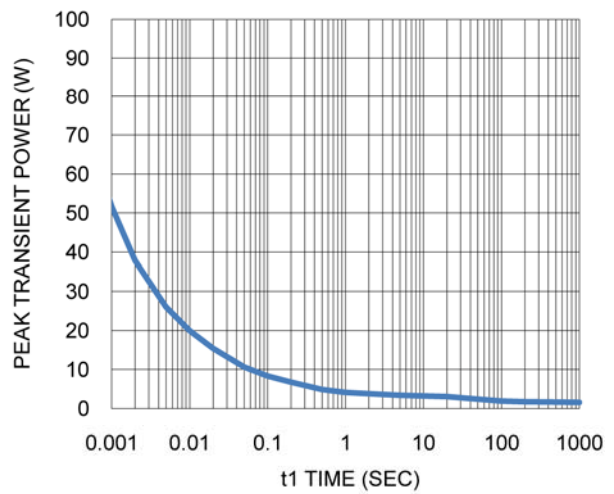
**7. Gate Charge**



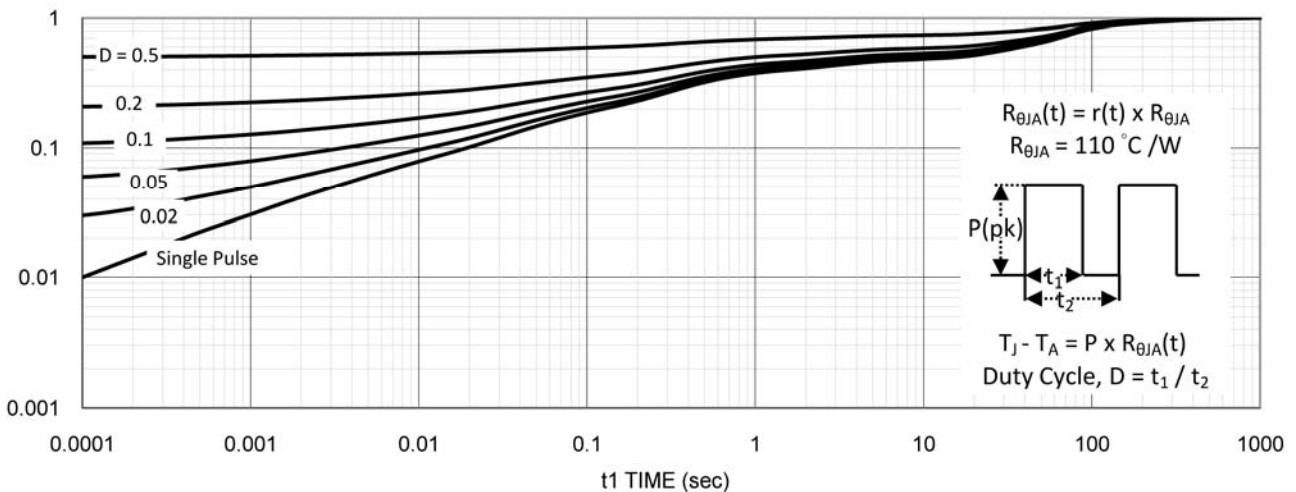
**8. Normalized On-Resistance Vs Junction Temperature**



**9. Safe Operating Area**



**10. Single Pulse Maximum Power Dissipation**



**11. Normalized Thermal Transient Junction to Ambient**