

## P-Channel 150-V (D-S) MOSFET

### Key Features:

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

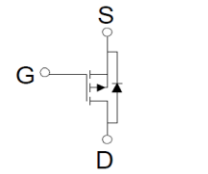
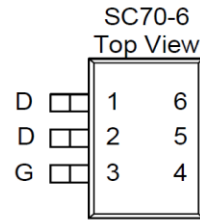
### Typical Applications:

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

PRODUCT SUMMARY		
$V_{DS}$ (V)	$r_{DS(on)}$ ( $\Omega$ )	$I_D$ (A)
-150	3 @ $V_{GS} = -10V$	-0.6
	3.2 @ $V_{GS} = -5.5V$	-0.6



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**



P-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)				
Parameter		Symbol	Limit	Units
Drain-Source Voltage		$V_{DS}$	-150	V
Gate-Source Voltage		$V_{GS}$	$\pm 20$	
Continuous Drain Current <sup>a</sup>	$T_A = 25^\circ\text{C}$	$I_D$	-0.6	A
	$T_A = 70^\circ\text{C}$		-0.43	
Pulsed Drain Current <sup>b</sup>		$I_{DM}$	-2.5	
Continuous Source Current (Diode Conduction) <sup>a</sup>		$I_S$	-0.6	A
Power Dissipation <sup>a</sup>	$T_A = 25^\circ\text{C}$	$P_D$	1.56	W
	$T_A = 70^\circ\text{C}$		0.81	
Operating Junction and Storage Temperature Range		$T_J, T_{stg}$	-55 to 150	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS				
Parameter		Symbol	Maximum	Units
Maximum Junction-to-Ambient <sup>a</sup>	$t \leq 10 \text{ sec}$	$R_{\theta JA}$	80	$^\circ\text{C/W}$
	Steady State		125	

### Notes

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

## Electrical Characteristics

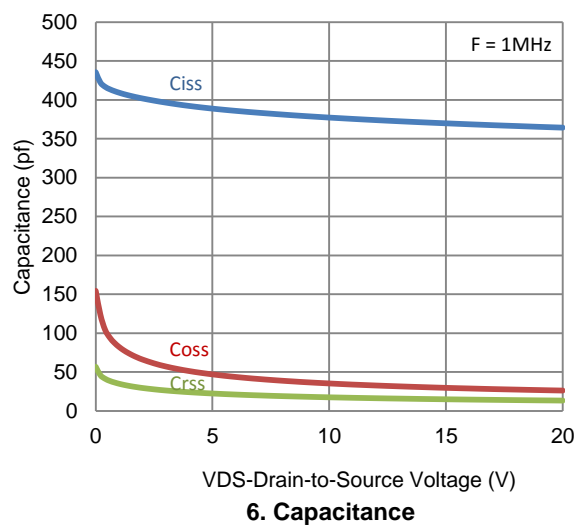
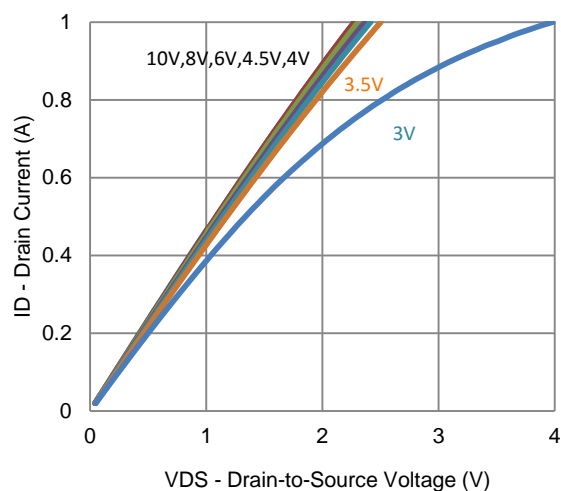
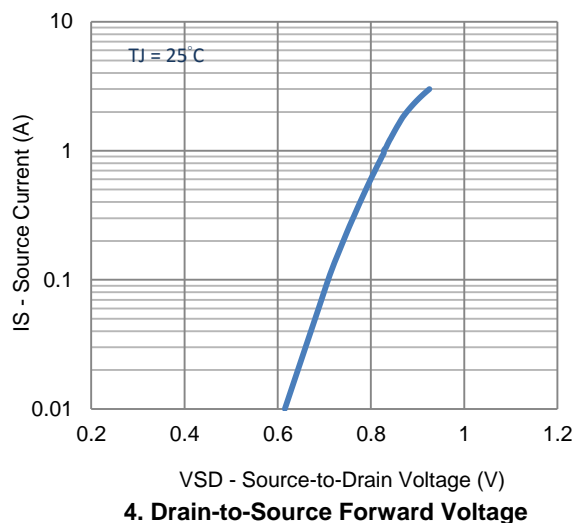
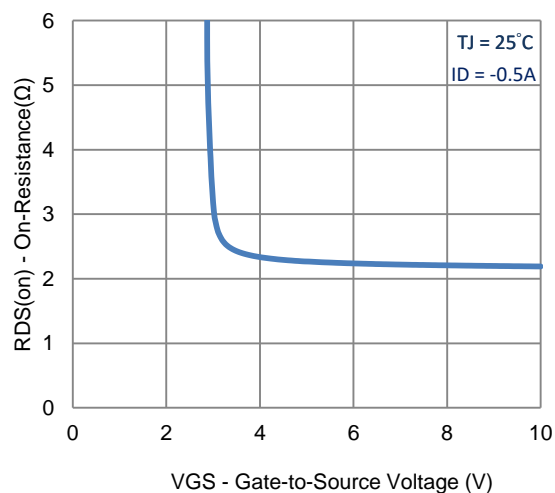
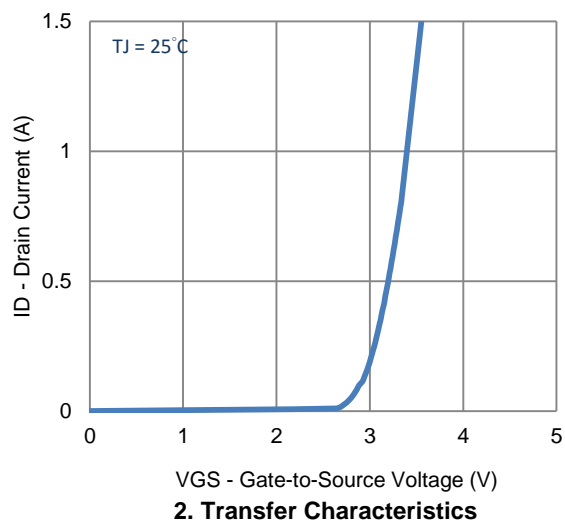
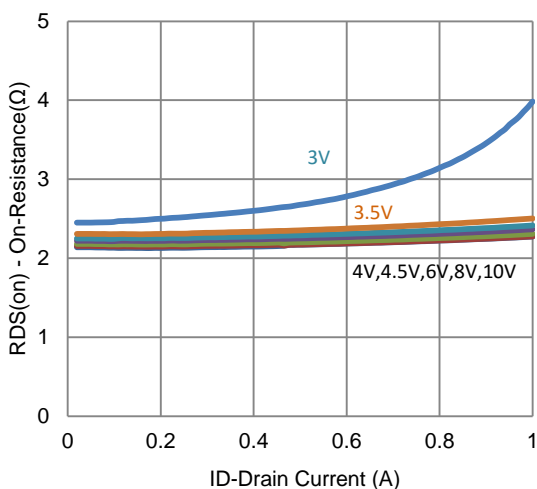
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static</b>						
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250 \mu A$	-1			V
Gate-Body Leakage	$I_{GSS}$	$V_{DS} = 0 V, V_{GS} = \pm 20 V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -120 V, V_{GS} = 0 V$			-1	$\mu A$
		$V_{DS} = -120 V, V_{GS} = 0 V, T_J = 55^\circ C$			-10	
On-State Drain Current <sup>a</sup>	$I_{D(on)}$	$V_{DS} = -5 V, V_{GS} = -10 V$	-1			A
Drain-Source On-Resistance <sup>a</sup>	$r_{DS(on)}$	$V_{GS} = -10 V, I_D = -0.5 A$			3	$\Omega$
		$V_{GS} = -5.5 V, I_D = -0.4 A$			3.2	
Forward Transconductance <sup>a</sup>	$g_{fs}$	$V_{DS} = -15 V, I_D = -0.5 A$		2		S
Diode Forward Voltage <sup>a</sup>	$V_{SD}$	$I_S = -0.5 A, V_{GS} = 0 V$		-0.76		V
<b>Dynamic <sup>b</sup></b>						
Total Gate Charge	$Q_g$	$V_{DS} = -75 V, V_{GS} = -5.5 V,$ $I_D = -0.5 A$		3.7		nC
Gate-Source Charge	$Q_{gs}$			0.9		
Gate-Drain Charge	$Q_{gd}$			1.6		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS} = -75 V, R_L = 150 \Omega,$ $I_D = -0.5 A,$ $V_{GEN} = -10 V, R_{GEN} = 6 \Omega$		5		ns
Rise Time	$t_r$			4		
Turn-Off Delay Time	$t_{d(off)}$			16		
Fall Time	$t_f$			6		
Input Capacitance	$C_{iss}$	$V_{DS} = -15 V, V_{GS} = 0 V, f = 1 \text{ Mhz}$		370		pF
Output Capacitance	$C_{oss}$			30		
Reverse Transfer Capacitance	$C_{rss}$			15		

## Notes

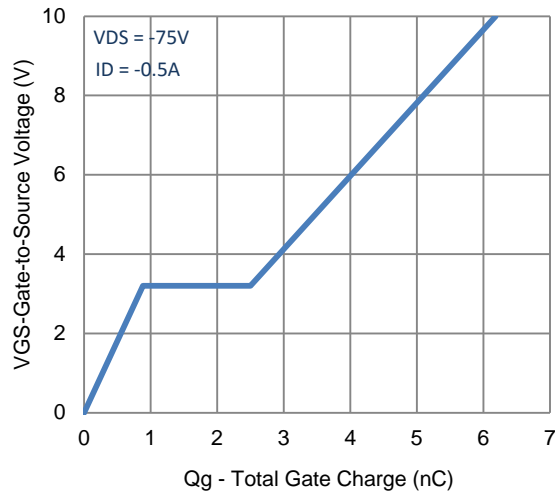
- a. Pulse test: PW ≤ 300us duty cycle ≤ 2%.
- b. Guaranteed by design, not subject to production testing.

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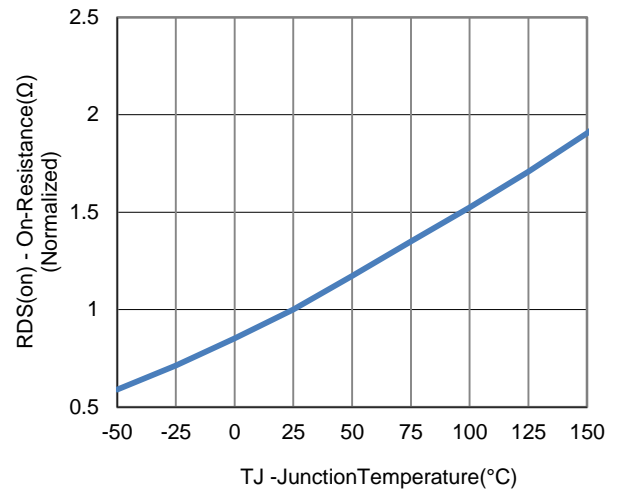
## Typical Electrical Characteristics



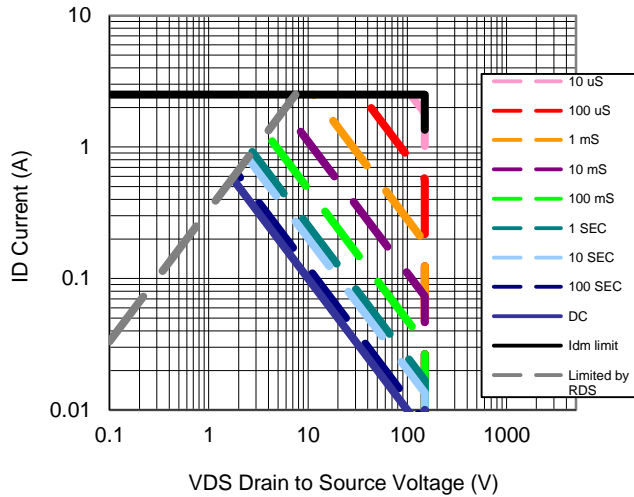
## Typical Electrical Characteristics



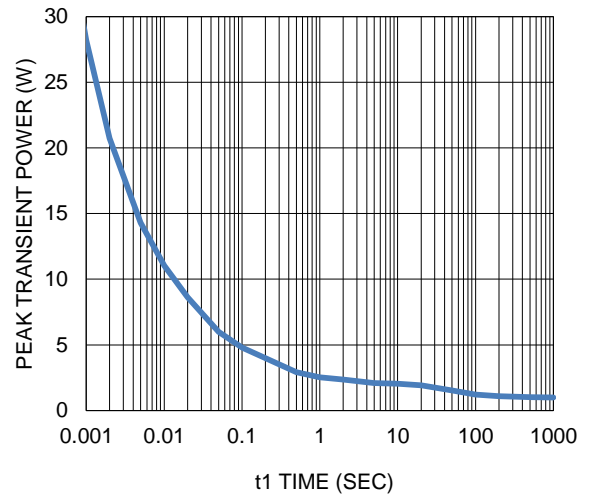
7. Gate Charge



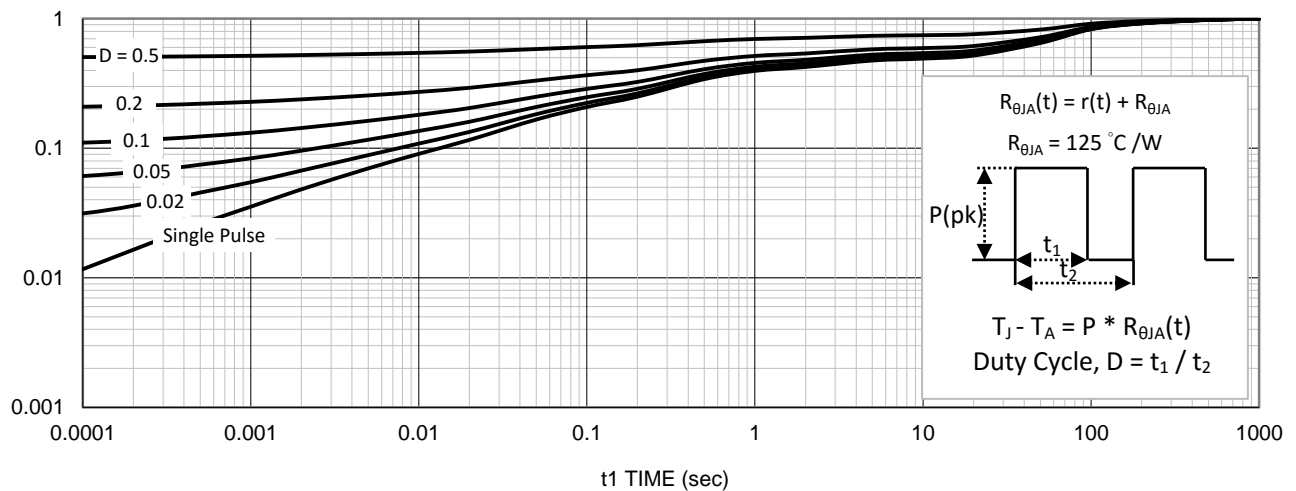
8. Normalized On-Resistance Vs Junction Temperature



9. Safe Operating Area

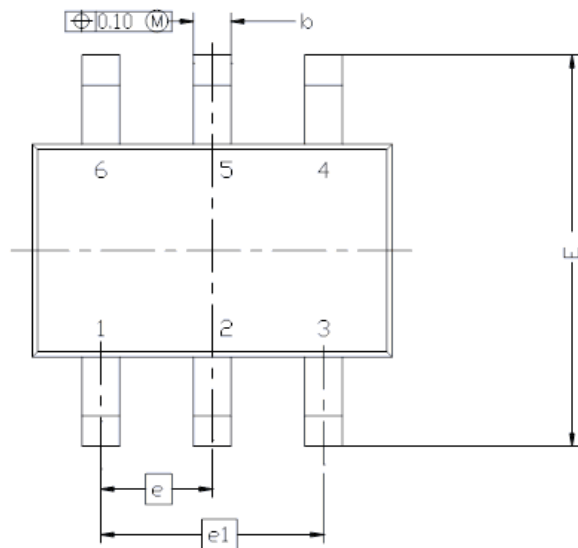


10. Single Pulse Maximum Power Dissipation



11. Normalized Thermal Transient Junction to Ambient

## Package Information



DIM.	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.900	0.95	1.10	0.035	0.037	0.043
A1	0.00	---	0.10	0.000	---	0.004
A2	0.70	0.90	1.00	0.028	0.035	0.039
b	0.15	0.22	0.30	0.006	0.016	0.012
c	0.08	0.127	0.20	0.003	0.005	0.008
D	2.10 BSC			0.083 BSC		
E	2.30 BSC			0.091 BSC		
E1	1.30 BSC			0.051 BSC		
e	0.65 BSC			0.026 BSC		
e1	1.30 BSC			0.051 BSC		
L	0.26	0.40	0.46	0.010	0.015	0.018
L2	0.254 BSC			0.010 BSC		
R	0.10	---	---	0.004	---	---
θ	0°	4°	8°	0°	4°	8°
θ1	7° NOM			7° NOM		

